Technical Meeting and Exhibition

MS&T25

MATERIALS SCIENCE & TECHNOLOGY

September 28–October 1, 2025 | Columbus, Ohio, USA

PRELIMINARY TECHNICAL PROGRAM

The content in the preliminary program was generated on August 5, 2025. However, changes are still being implemented for the technical program. Please refer to the online session sheets for the most up-to-date information.

Organizing Societies:

The American Ceramic Society www.ceramics.org

AIST Association for Iron & Steel Technology

TMS The Minerals, Metals & Materials Society

Program At A Glance

Program At A Glance

Topic Area/Symposium	Date	Time	Room	Page
Engineering Ceramics: Microstructure-Property-Performance Relations and Applications				
Poster Session	TUE	PM	Exhibit Hall C/D	104
Advanced Processing Technology / Corrosion Behavior of Ceramics / Modeling and Simulation	WED	AM	B240/241	78
Composites / Properties of Engineering Ceramics	WED	PM	B240/241	92
Glasses and Optical Materials: Challenges, Advances, and Applications				
Glass Formation and Manufacturing	MON	AM	B132	20
Non-Oxide Glasses, Optics, and Glassy Electrolytes	MON	PM	B132	37
GOMD Alfred R. Cooper Award Session	TUE	AM	B132	49
Structure and Properties of Oxide Glasses	TUE	PM	B132	64
Poster Session	TUE	PM	Exhibit Hall C/D	104
Manufacturing and Processing of Advanced Ceramic Materials				
New Frontiers in Advanced Manufacturing of Ceramic Materials	MON	PM	B240/241	38
Advances in Ceramic Processing I: Sintering	TUE	AM	B240/241	51
Poster Session	TUE	PM	Exhibit Hall C/D	106
Advances in Ceramic Processing II: Applications	WED	AM	B142/143	81
Phase Transformations in Ceramics: Science and Applications				
Phase Transformations in Ceramics I	WED	AM	B132	84
Phase Transformations in Ceramics II	WED	PM	B132	96
Solid-State Optical Materials and Luminescence Properties				
Solid-State Optical Materials and Luminescence Properties	MON	AM	B230	24
Poster Session	TUE	PM	Exhibit Hall C/D	110
Fundamentals and Characterization				
Applications of Uncertainty Quantification (UQ) in Science and Engineering				
UQ Applications in Materials and Engineering - Bayesian Calibration, Sparse Grid Surrogates, Meso-Scaling, Meta Analysis, Deep Kernel Learning	MON	PM	C162B	32
Emergent Materials Under Extremes and Decisive In Situ Characterizations				
In Situ Technologies Combined with Extreme Conditions	MON	AM	C162A	18
Advanced Characterization of Fuel and Ceramic Materials Under Extreme Conditions	MON	PM	C162A	35
Grain Boundaries, Interfaces, and Surfaces: Fundamental Structure-Property-Performance Relationships				
Sintering & Grain Growth and Modeling	MON	AM	C161A	21
Surfaces and Heterointerfaces	MON	PM	C161A	37
Electronic and Mechanical Properties	TUE	AM	C161A	49

Program At A Glance

Program At A Glance

Topic Area/Symposium	Date	Time	Room	Page
Progressive Solutions to Improve Corrosion Resistance of Nuclear Waste Storage Materials				
Iron Phosphate Glasses and Advanced Characterization Techniques for Nuclear Waste Forms	TUE	PM	D283	68
Poster Session	TUE	PM	Exhibit Hall C/D	109
Improving Processing of Nuclear Waste Glass, Mechanical Mechanisms of Crack Propagation and Measurement of Residual Stresses in Stainless Steel	WED	AM	D280	85
Processing and Manufacturing				
Advances in Refractory High Entropy Alloys and Ceramics				
High-Temperature Mechanical Properties	MON	PM	B232	32
Structures and Mechanical Properties	TUE	AM	B232	44
High Entropy Ceramics	TUE	PM	B232	60
Alloy Processing and Mechanical Behavior	WED	AM	B232	75
Alloy Design and Modeling	WED	PM	B232	90
Alloy Phase Transformations at Elevated Temperatures				
Ni-Based Superalloys	MON	AM	B232	18
Poster Session	TUE	PM	Exhibit Hall C/D	103
Lightweight Composites, Materials & Alloys				
Microstructure and Processing	TUE	AM	B231	50
Microstructure and Properties	TUE	PM	B231	66
Poster Session	TUE	PM	Exhibit Hall C/D	106
Microstructure, Processing and Properties	WED	AM	B231	80
Processing and Mechanical Behavior	WED	PM	B231	93
Processing and Performance of Materials Using Microwaves, Electric and Magnetic Fields, Ultrasound, Lasers, and Mechanical Work – Rustum Roy Symposium				
Rustum Roy Symposium - Session I	MON	AM	B233	24
Rustum Roy Symposium - Session Ii	MON	PM	B233	40
Poster Session	TUE	PM	Exhibit Hall C/D	109
Sintering and Related Powder Processing Science and Technologies				
Flash and Ultra-Rapid Sintering: Mechanisms, Control, and Applications	TUE	PM	B233	69
Poster Session	TUE	PM	Exhibit Hall C/D	110
Field-Assisted Sintering and SPS: Mechanisms, Materials, and Applications	WED	AM	B233	85
Sintering Control: Linking Formulation, Simulation, and Material Properties	WED	PM	B233	97

Program At A Glance

Topic Area/Symposium	Date	Time	Room	Page
Materials for CO2 Sequestration				
Materials for CO2 Sequestration	TUE	AM	B244/245	52
Phasing Out Carbon: Phase Transformation Challenges in Decarbonization Technologies				
Phasing Out Carbon: Phase Transformation Challenges in Decarbonization Technologies	MON	PM	B244/245	39
Poster Session	TUE	PM	Exhibit Hall C/D	109
Porous Materials for Energy and Environment Applications				
Porous Materials I	TUE	PM	B244/245	68
Poster Session	TUE	PM	Exhibit Hall C/D	109
Porous Materials II	WED	AM	B244/245	84
Special Topics				
2025 Graduate Student Poster Contest				
2025 Graduate Student Poster Contest	TUE	PM	Exhibit Hall C/D	Coming Soon
2025 Undergraduate Student Poster Contest				
2025 Undergraduate Student Poster Contest	TUE	PM	Exhibit Hall C/D	Coming Soon
ACerS Robert B. Sosman Award Symposium: Solid State Chemistry Meets Solid State Ionics				
ACerS Robert B. Sosman Award Symposium	WED	AM	B131	71
IGNITE MSE: Bridging Gaps in Innovation and Collaboration				
Poster Session	TUE	PM	Exhibit Hall C/D	106
Innovative Materials Solutions for a Rapidly Evolving Market				
Innovative Materials Solutions for a Rapidly Evolving Market	TUE	PM	C162B	65
Materials and Manufacturing in Low Earth Orbit (and Beyond)				
Manufacturing of Organics/Biomaterials in Low Earth Orbit	TUE	AM	C161B	51
Materials Testing & Modeling for Space Applications	TUE	PM	C161B	66
Welding in Low Earth Orbit- History and Planned Experiments	WED	AM	C161B	81
Building Space Infrastructure in Low Earth Orbit and Beyond	WED	PM	C161B	93
Navigating Career Pivots at the Mid-Career and Beyond				
Navigating Career Pivots at the Mid-Career and Beyond	TUE	AM	C162B	53
TMS Frontiers of Materials Award Symposium: Harnessing Charged and Chemical Defects for Exceptional Structural and Functional Properties				
TMS Frontiers of Materials Award Symposium I	TUE	AM	C162A	55
TMS Frontiers of Materials Award Symposium II	TUE	PM	C162A	69
TMS Frontiers of Materials Award Symposium III	WED	AM	C162A	86

SPECIAL TOPICS

Plenary Sessions — AIST Plenary Session

Monday AM | September 29, 2025
Short North Ballroom | Convention Center

8:00 AM Introductory Comments

8:05 AM Plenary
AIST Adolf Martens Memorial Steel Lecture: Microstructure Engineering for Advanced High-Strength Line Pipe Steels: *Dengqi Bai*[1]; [1]SSAB Americas

8:45 AM Award Presentation

8:50 AM Concluding Comments

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

17th Symposium on Green and Sustainable Technologies for Materials Manufacturing and Processing — Green and Sustainable Technologies for Manufacturing Materials I

Sponsored by: ACerS Engineering Ceramics Division

Program Organizers: Surojit Gupta, University of North Dakota; Mrityunjay Singh, NASA; Tatsuki Ohji, National Institute of Advanced Industrial Science and Technology; Hisayuki Suematsu, Nagaoka University of Technololgy; Enrico Bernardo, University of Padova; Rajiv Asthana, University of Wisconsin; Yiquan Wu, Alfred University; Wei Ji, Wuhan University of Technology

Monday AM | September 29, 2025
B242/243 | Convention Center

Session Chairs: Enrico Bernardo, University of Padova; Bai Cui, University of Nebraska Lincoln; Yang Bai, University of Oulu; Kathy Lu, University of Alabama Birmingham

8:00 AM Invited
Weak Alkali Activation for New Sustainable Porous Components Based on Waste Glass: Francesco Carollo[1]; Muhammad Jamshaid Zafar[1]; *Enrico Bernardo*[1]; [1]University of Padova

8:30 AM Invited
AI Data Centers Powered by Small Modular Reactors and Additive Manufacturing: *Bai Cui*[1]; Lanh Trinh[1]; [1]University of Nebraska Lincoln

9:00 AM
Advancing Pressure Spinning Polymeric Fibre Manufacture for Enhanced Performance and Sustainability: *Manul Amarakoon*[1]; Shervanthi Homer-Vanniasinkam[1]; Mohan Edirisinghe[1]; [1]University College London

9:20 AM

Multi-Stimuli Integration in Alloy Design: A Shear-Assisted Processing Approach for High-Performance Nano-Composite Materials: *Bharat Gwalani*[1]; [1]North Carolina State University

9:40 AM
Interfacial Microstructure and Diffusion Bonding Mechanisms in Aluminum-Copper Systems with Ultra-Thin Copper Sheet for Electric Motors: *Hossein Abbasi*[1]; Lei Chen[1]; [1]University of Michigan Dearborn

10:00 AM Break

10:20 AM Invited
Novel Polymer-Derived MXene-SiOC Ceramic Nanocomposites: *Kathy Lu*[1]; Advaith Rau[2]; [1]University of Alabama Birmingham; [2]Virginia Tech

10:50 AM
Interface Engineering for High-Performance All-Solid-State Batteries: *Taeseup Song*[1]; Ungyu Paik[1]; Seungcheol Myeong[1]; Jiwoon Kim[1]; Insung Hwang[1]; Minsung Kim[1]; Ganggyu Lee[1]; Myeungwoo Ryu[1]; Joonhyeok Park[1]; Jooheon Sun[1]; Seungmin Han[1]; Geunsu Kim[1]; Woojin Jeong[1]; Sumin Hong[1]; Giha Lee[1]; Jinwoo Jeong[1]; Yeseung Lee[1]; Jun Lim[1]; Sejin Park[1]; Seoyun Jeong[1]; Bogeum Choi[1]; Se-On Sa[1]; Yeongsung Yun[1]; [1]Hanyang University

11:10 AM Invited
Recycling of Hazardous and Energy-Intensive Piezoelectric Ceramics Via the Upside-Down Compositing Method: *Yang Bai*[1]; [1]University of Oulu

11:40 AM
Foam Glass Production from Flat Glass Waste: Technical Assessment of Sodium Hydroxide as a Foaming Agent: *Evaldo Kubaski*[1]; Robson da Silva[1]; Jamile Manoel[1]; Gustavo Gabriel[1]; [1]State University of Ponta Grossa

BIOMATERIALS

3D Printing of Biomaterials and Devices — 3D Printing of Biomaterials and Devices

Sponsored by: TMS: Biomaterials Committee

Program Organizers: Sahar Vahabzadeh, Northern Illinois University; Solaiman Tarafder, South Dakota State University; Amit Bandyopadhyay, Washington State University; Susmita Bose, Washington State University

Monday AM | September 29, 2025
C172 | Convention Center

Session Chairs: Solaiman Tarafder, South Dakota State University; Sahar Vahabzadeh, Northern Illinois University

8:00 AM
Virtual Surgical Planning for the Design and Manufacturing of Stiffness-Matched Personalized Load-Bearing Implants: Transfemoral Percutaneous Implant Case: *Luis Olivas Alanis*[1]; Jason Souza[1]; David Dean[1]; [1]The Ohio State University

8:20 AM
Biomechanical Tuning of Composites for Tissue Engineering: *Dinesh Katti*[1]; Hanmant Gaikwad[1]; Nanang Qosim[2]; Priyanka Kumari[1]; Pooyan Pashaki[1]; Mohan Edirisinghe[2]; Kalpana Katti[1]; [1]North Dakota State University; [2]University College London

8:40 AM
3D Printing of Active Medical Devices for Transdermal Drug Delivery and Biosensing: *Roger Narayan*[1]; Gregory Sachan[2]; [1]University of North Carolina; [2]Duke University

9:00 AM
A Collagen-Based Bioink for 3D Printing Biomimetic Tissue Graft for Rotator Cuff Repair: *Samiul Nibir*[1]; Solaiman Tarafder[1]; [1]South Dakota State University

9:20 AM
Structural And Mechanical Property Characterization of 3D-Printed Anisotropic PEGDA Hydrogel Vintile Lattices for Tissue-Mimicking Phantom Applications: *Daniel Yoon*[1]; Margrethe Ruding[2]; Kevin Eckstein[3]; Ruth Okamoto[3]; Philip Bayly[3]; [1]Pacific Northwest National Laboratory; [2]Technical University of Denmark; [3]Washington University in St. Louis

9:40 AM
3D Printed Ceramics in Natural Medicine Delivery for Bone Regeneration: *Susmita Bose*[1]; [1]Washington State University

10:00 AM Break

10:20 AM
Engineering Osseointegration: 3D Printing of AMP-Infused PEEK for Endosseous Dental Implant Applications: *Prabaha Sikder*[1]; [1]Cleveland State University

10:40 AM
Bioglass Reinforced Ti6Al4V Composites for Load-Bearing Implants: *Amit Bandyopadhyay*[1]; Lochan Upadhayay[1]; Susmita Bose[1]; [1]Washington State University

11:00 AM
Engineering Location, External Shape, and Internal Pore Geometry, to Achieve Stiffness-Matched, 3D Printed, Nickel-Titanium Mandibular Graft Fixation Plates: *Luis Olivas Alanis*[1]; Agnieszka Chmielewska-Wysocka[2]; Ciro Rodriguez[3]; David Dean[1]; [1]The Ohio State University; [2]Cardinal Stefan Wyszynski University in Warsaw; [3]Tecnologico de Monterrey

11:20 AM
Fabrication of Personalized Resorbable Polymer Textile Scaffolds Using a Multi-Axis and Multi-Modality Biofabrication Platform: *Javier Vazquez-Armendariz*[1]; Tanya Djemal[1]; Jordan Peiffer[1]; Evan Gilligan[1]; Ciro Rodriguez[1]; David Dean[1]; [1]Ohio State University

11:40 AM
Microstructural Effects on Corrosion Resistance and In-Vitro Mechanical Performance of LMD Fabricated 316L Stainless Steel for Biomedical Applications: Priyadarshini Nayak[1]; Prekshya Nath[1]; *Indrani Sen*[1]; [1]Indian Institute of Technology Kharagpur

ADDITIVE MANUFACTURING

Additive Manufacturing of Polymeric-Based Materials: Potentials and Challenges — Revolutionizing Applications and Unleashing the Potential of Polymer-Based Additive Manufacturing

Program Organizers: Matthew Caputo, Penn State Shenango; Ola Rashwan, Pennsylvania State University- Harrisburg; Daudi Waryoba, Pennsylvania State University; Jason Walker, The Ohio State University

Monday AM | September 29, 2025
C160A | Convention Center

Session Chairs: Ola Rashwan, Penn State Harrisburg; Matt Caputo, Penn State Beaver

8:00 AM
3DP Polymers for Radiation Shielding for Portable Neuroimaging Devices: *Kate Fox*[1]; Azadeh Mirabedina[1]; Chris McCrowe[1]; Toh Yen Pang[1]; [1]RMIT University

8:20 AM
Fabrication of Soft Robotic Sensors and Actuators via Direct Ink Writing of Dual-Curable Elastomers: *Emrah Demirkal*[1]; Konstantinos Sierros[1]; Derrick Banerjee[1]; Jordyn Herter[1]; Coen Wasielewski[1]; Katarzyna Sabolsky[1]; Edward Sabolsky[1]; [1]West Virginia University

8:40 AM
From Bottles to Builds: Development of a Recycled PET Filament: *Pete Schupska*[1]; Luke Debruin[2]; Ceylan Algan[1]; Thomas Harris[1]; Jacob Norris[1]; Jason Walker[1]; [1]The Ohio State University - Center for Design and Manufacturing Excellence; [2]IC3D, Inc.

9:00 AM
From Waste Stream to 3D Printing: Innovative Approaches to Sustainable Material Development: *Ramona Fayazfar*[1]; [1]Ontario Tech University

9:20 AM
Polymer Gas Atomization: A Novel Approach to Powder Production for Additive Manufacturing: *Abigail Stanlick*[1]; Jordan Tiarks[2]; Boyce Chang[1]; Iver Anderson[2]; [1]Iowa State University; [2]Ames National Laboratory

9:40 AM
Rapid Photocured Plastic Scintillators for Radiation Detection and Additive Manufacturing Applications: *Chandler Moore*[1]; Juan Manfredi[1]; Michael Febbraro[1]; Daniel Rutstrom[1]; Andrew Decker[2]; Ryan Kemnitz[1]; Thomas Ruland[3]; Brennan Hackett[3]; Paul Hausladen[3]; [1]Air Force Institute of Technology; [2]United States Military Academy, West Point; [3]Oak Ridge National Laboratory

10:00 AM
Thermoplastic Polyurethane (TPU) as a High-Loading Binder System for Magnesium (Mg) Alloy Extrusion: *Hyeonseok Kim*[1]; Eoin O'Cearbhaill[1]; Mert Celikin[1]; [1]University College Dublin

ADDITIVE MANUFACTURING

Additive Manufacturing, Directed Energy Deposition of Metals: Processing – Microstructure – Mechanical Property Relationships — Stainless Steels

Sponsored by: TMS: Additive Manufacturing Committee

Program Organizers: Jonah Klemm-Toole, Colorado School of Mines; Joy Gockel, Colorado School of Mines

Monday AM | September 29, 2025
C160B | Convention Center

Session Chair: Jonah Klemm-Toole, Colorado School of Mines

8:00 AM
A Geometry Printability Study on the Microstructural and Mechanical Properties of DED-Manufactured 316H Stainless Steel for Nuclear Applications: *Daniel Yoon*[1]; Subhashish Meher[1]; Nicholas Conway[1]; Chris Hutchinson[1]; Robert Montgomery[1]; John Snitzer[2]; Xiaoyuan Lou[2]; Isabella van Rooyen[2]; [1]Pacific Northwest National Laboratory; [2]Purdue University

8:20 AM
Anisotropic Compression Behavior of 316L Stainless Steel at Room and Cryogenic Temperatures: The Influence of Twinning and Transformation Mechanisms: Saurabh Pawar[1]; K.U. Yazar[2]; Khushahal Thool[1]; Wi-Geol Seo[1]; Chang-Gon Jeong[3]; Yoon-Uk Heo[3]; *Shi Hoon Choi*[1]; [1]Sunchon National University; [2]Vellore Institute of Technology; [3]POSTECH

8:40 AM
Effects of Forging on Microstructural and Mechanical Properties of AISI 316LSi Fabricated via Wire Arc Additive Manufacturing (WAAM): *Vishnu Ramasamy*[1]; Brett Ley[1]; Brian Thurston[2]; Glenn Daehn[2]; Bradley Jared[3]; John Lewandowski[1]; [1]Case Western Reserve University; [2]Ohio State University; [3]University of Tennessee

9:00 AM
Enhanced Grain Refinement and Mechanical Properties in WAAM 316L by Integrated Hot Forging: *Henry Leon-Henao*[1]; Kaue C. Riffel[1]; Antonio J. Ramirez[1]; [1]The Ohio State University

9:20 AM
New Insights into Microstructure Evolution and Deformation Mechanisms in Additively Manufactured 316L Stainless Steel: *Bassem Barkia*[1]; Maxime Vallet[2]; Alexandre Tanguy[3]; Thierry Auger[4]; Eva Héripré[4]; [1]PIMM, Arts et Métiers, Cnam, CNRS UMR 8006; [2]Université Paris-Saclay; [3]Institut Polytechnique de Paris; [4]PIMM, Arts et Métiers

9:40 AM
Wire Arc Additive Manufacturing of 17-4 PH Stainless Steel for Structural Components in Lock and Dam Infrastructure: Microstructural and Mechanical Performance Evaluation: *Md Naimur Rahman Antu*[1]; Shawkat Imam Shakil[1]; Meysam Haghshenas[1]; Joseph Lawrence[1]; [1]University of Toledo

10:00 AM Break

10:20 AM
Creep and Creep-Fatigue Behavior of Conventional and Additively Manufactured SS316L for Nuclear Applications: *Mahmoud Hawary*[1]; K.L. Murty[1]; Nadia Kouraytem[2]; [1]North Carolina State University; [2]Utah State University

10:40 AM
Creep Performance of Alloys Processed with Gas Metal Arc Directed Energy Deposition (GMA-DED): *Jonah Klemm-Toole*[1]; Olivia DeNonno[1]; Sophia Hill[1]; Dominic Piccone[1]; Robert Hamlin[2]; Stephen Tate[3]; [1]Colorado School of Mines; [2]Naval Nuclear Laboratory; [3]Electric Power Research Institute

11:00 AM
Water-Atomized Powders for Powder-Feed Direct Energy Deposition: *Yiyang Xu*[1]; Bryan Webler[1]; [1]Carnegie Mellon University

11:20 AM
Directed Energy Deposition of Fe43.5Mn34Al15Ni7.5 Shape Memory Alloy: *Willow Knight*[1]; Sameehan Joshi[1]; Narendra Dahotre[1]; Rob Mayer[2]; Marcus Young[1]; [1]University of North Texas; [2]Queen City Forging

ADDITIVE MANUFACTURING

Additive Manufacturing: Enhancement and Synergy with Traditional Methods — Additive Manufacturing: Enhancement and Synergy with Traditional Methods I

Sponsored by: TMS: Additive Manufacturing Committee, TMS: Shaping and Forming Committee

Program Organizers: Henry Young, Wright State University; Tushar Borkar, Cleveland State University; Raghavan Srinivasan, Wright State University; Kester Clarke, Los Alamos National Laboratory

Monday AM | September 29, 2025
C150 | Convention Center

Session Chair: To Be Announced

8:00 AM
Epitaxial Solidification and Cracking Behavior of CMSX-4 Welds: Assessing Additive Manufacturing Integrity: *Min-Chang Shin*[1]; Eun-Joon Chun[1]; [1]Pukyong National University

8:20 AM
Mechanical Properties of Dissimilar Welds Between LPBFed and Wrought 17-4PH Stainless Steels: Role of LPBFed 17-4PH STS Precipitation Characteristics: *Ha Yeon Joo*[1]; Ji Won Lee[2]; Yong Hyeok Choi[2]; Hyun Uk Hong[1]; [1]Changwon National University; [2]Doosan Enerbility

8:40 AM
Additive Manufacturing Evaporative Casting (AMEC) for Tooling and Nickel Alloys: *Sarah Jordan*[1]; Mark DeBruin[2]; [1]Skuld LLC, Worcester Polytechnic Institute; [2]Skuld LLC

9:00 AM
Additive Manufacturing to Accelerate Forging Operations: Inconel 718 and 316L Stainless Steel: Henry Young[1]; Showmik Ahsan[1]; Sambhaji Kusekar[2]; Raghavan Srinivasan[1]; Ahsan Mian[1]; Bishal Silwal[3]; Hossein Taheri[3]; Yashwanth Bandari[4]; Prabir Chaudhury[5]; *Tushar Borkar*[5]; [1]Wright State University; [2]Cleveland State University; [3]Georgia Southern University; [4]FasTech LLC; [5]Education and Consulting LLC

9:20 AM
Design of Additively Manufactured Preforms for Hot Forging.: *Vignesh Asam*[1]; Showmik Ahsan[1]; Ahsan Mian[1]; Raghu Srinivasan[1]; Henry Young[1]; [1]Wright State University

9:40 AM
Characterization of Additively Manufactured AF9628 Steel Parts Produced Via Metal Fused Filament Fabrication: Quinn Johnson[1]; Aaron Bauer[1]; *Tanjore Jayaraman*[1]; [1]United States Air Force Academy

10:00 AM Break

10:20 AM
Electrodeposition of Nickel for Load Carrying Applications: *Mohammad J. Mahtabi*[1]; George Thompson[1]; Alireza Behvar[2]; Ahu Celebi[2]; Mohammad Elahinia[2]; [1]The University of Tennessee Chattanooga; [2]The University of Toledo

10:40 AM
SolidStir® Additive Manufacturing Using Conventional Machine Tools and Low-Cost Feedstock: *Kumar Kandasamy*[1]; Anurag Gumaste[1]; Pankaj Kulkarni[1]; Ravi Sankar Haridas[2]; Rajiv Mishra[2]; [1]Enabled Engineering; [2]University of North Texas

NUCLEAR ENERGY

Advanced Characterization of Materials for Nuclear, Radiation, and Extreme Environments VI — Advanced Characterization Session I

Sponsored by: TMS: Nuclear Materials Committee

Program Organizers: Cheng Sun, Clemson University; Caitlin Kohnert, Los Alamos National Laboratory; Samuel Briggs, Oregon State University; Michael Short, Massachusetts Institute of Technology; Khalid Hattar, University of Tennessee Knoxville

Monday AM | September 29, 2025
D280 | Convention Center

Session Chair: To Be Announced

8:00 AM
Unique Aspects of Coupling Experiment and Modeling in Understanding Irradiation Behavior of Nuclear Materials: *Marat Khafizov*[1]; [1]Ohio State University

8:30 AM
Coupled Experimental and Modeling of the Interactions Between Dislocations, Precipitates, and Grain Boundaries from Atomic to Mesoscale: *Liming Xiong*[1]; [1]North Carolina State University

8:50 AM
High-Temperature Corrosion of Pure Vanadium in Molten Chloride Salt Environments: *Aaron Penders*[1]; Stephanie Baldivieso[2]; Alejandro Ballesteros[2]; Ruchi Gakhar[2]; Kaustubh Bawane[2]; [1]University of Michigan; [2]Idaho National Laboratory

9:10 AM
Comparative Assessment of Biaxial Creep Anisotropy in ZIRLO® and HANA-4 Zirconium Alloys: Influence of Microstructure and Processing: *Mahmoud Hawary*[1]; K.L. Murty[1]; [1]North Carolina State University

9:30 AM
Strain Field Evolution Around MX Precipitates in a Ferrite Matrix After Neutron Irradiation at 490\176C to 7.4 dpa: *Emily Proehl*[1]; Yan-Ru Lin[2]; Weicheng Zhong[2]; Steven Zinkle[1]; [1]University of Tennessee-Knoxville; [2]Oak Ridge National Laboratory

9:50 AM Break

10:10 AM
In-Situ and 3D Measurements of Dynamic Processes in Nuclear Materials Utilizing Synchrotron High-energy X-rays: *Xuan Zhang*[1]; Jun-Sang Park[1]; Peter Kenesei[1]; Jonathan Almer[1]; James Stubbins[1]; Lin Gao[1]; Mark Messner[1]; Meimei Li[1]; [1]Argonne National Laboratory

10:40 AM
Influence of Point Defect Evolution on Thermal Conductivity Degradation and Fission Gas Behavior in UO Under Accelerated Irradiation: *Mutaz Alshannaq*[1]; Marat Khafizov[1]; [1]Ohio State University

11:00 AM
Ultra-High Temperature Thermal Characterization of Materials for Nuclear Applications: *Heng Wang*[1]; Florian Linseis[1]; [1]Linseis Inc.

11:20 AM
Statistical Effects of Carbon on Primary Radiation Damage and Initial Clustering of Defects in Austenitic Stainless Steel: *Mathew Swisher*[1]; Andrea Jokisaari[1]; [1]Idaho National Laboratory

MATERIALS-ENVIRONMENT INTERACTIONS

Advancement of Measurement Technologies for Harsh Environments — Advancement of Measurement Technologies for Harsh Environments

Sponsored by: TMS: Energy Committee

Program Organizers: Ruchi Gakhar, Idaho National Laboratory; Ammon Williams, Idaho National Laboratory; Tae-sic Yoo, Idaho National Lab

Monday AM | September 29, 2025
D180 | Convention Center

Session Chairs: Ruchi Gakhar, Idaho National Laboratory; Ammon Williams, Idaho National Laboratory; Tae-Sic Yoo, Idaho National Laboratory

8:00 AM
Gathering Corrosion Data for Light Water Reactors and Molten Salt Reactors While Keeping Fires to a Minimum: *Stephen Raiman*[1]; [1]University of Michigan

8:20 AM
Thermal Conductivity of High Temperature Liquids Using Fiber Optic Thermoreflectance: *Alexander Bataller*[1]; Kyle Rizzuto[1]; [1]North Carolina State University

8:40 AM
Demonstration of a Sensor for On-Line Monitoring of Liquids in Extreme Environments: *Davis Bryars*[1]; Kayla Hahn[1]; Munmun Jahan[1]; Ammon Williams[2]; Alexander Bataller[1]; [1]NCSU; [2]Idaho National Laboratory

9:00 AM
Demonstration of the SPIDER Probe on Actinide-Bearing Molten Salts: *Kayla Hahn*[1]; Alexander Bataller[1]; Ammon Williams[2]; [1]North Carolina State University; [2]Idaho National Lab

9:20 AM
Operation and Sensor Testing with INL Molten Salt Sensor Testbed: *Diego Macias*[1]; Qiufeng Yang[1]; Silvino Balderrama Prieto[1]; Christopher Gundersen[1]; Victoria Davis[1]; Chrarles Payne[1]; Ammon Williams[1]; Ruchi Gakhar[1]; [1]Idaho National Laboratory

9:40 AM
Infrared Video Imaging for In-Line Evaluation of Oxide Descaler Performance on Steel Strips: Ry Karl[1]; *Jarrod Angove*[1]; Jonas Valloton[1]; J. Barry Wiskel[1]; Chad Cathcart[2]; Tihe Zhou[2]; Christopher Martin-Root[2]; Hani Henein[1]; [1]University of Alberta; [2]Stelco Inc

10:00 AM Break

10:15 AM
Molten Salt Composition Measurements with Double-Pulse and Resonant Laser-Produced Plasmas: *Igor Jovanovic*[1]; Londrea Garrett[1]; George Sun[1]; Miloš Burger[1]; Ammon Williams[2]; [1]University of Michigan; [2]Idaho National Laboratory

10:35 AM
Development of an Improved Needle Probe to Measure the Thermal Conductivity Molten Salts: *Britton Baltich*[1]; Troy Munro[1]; Jacob Numbers[1]; Andrew Christensen[1]; Sam Nasman[1]; Isaac Walker[1]; Ryan Ruth[1]; Hailey Snodgrass[2]; [1]Brigham Young University; [2]RIT

10:55 AM
Digital Twin Development of a High-Temperature Molten Salt System: *Xingang Zhao*[1]; Vineet Kumar[2]; Wesley Williams[2]; William Gurecky[2]; [1]University of Tennessee; [2]Oak Ridge National Laboratory

11:15 AM
Hot Hardness Method for High Temperature Materials Applications: *C Paul Qiao*[1]; Dan Tanguay[1]; Steve Schmitz[1]; Joe Schreiner[1]; Levi Kempka[1]; [1]L.E. Jones

11:35 AM
Effect of Zr and Hf Additions on the Mechanical Properties of ODS Inconel-718 Superalloy Processed by Mechanical Alloying and Powder Forging: *Polasani Ajay*[1]; Vikram Dabhade[1]; S.V.S Narayana Murty[2]; Sushant Manwatkar[2]; [1]Indian Institute of Technology Roorkee; [2]Indian Space Research Organization

11:55 AM
Interaction of Liquid Phase Diisopropyl Methyl Phosphonate(Dimp) with Material Surrogates for Components of Soil and Combustion Products of Metal Fuels: *Swapnil Das*[1]; Khushi Patel[1]; Mirko Schoenitz[1]; Edward Dreizin[1]; [1]New Jersey Institute of Technology

---

IRON AND STEEL (FERROUS ALLOYS)

Advances in Ferrous Process Metallurgy — Simulations & Modeling

Sponsored by: AIST Metallurgy—Processing, Products and Applications Technology Committee

Program Organizers: Yashwanth Injeti, Big River Steel; Viraj Ashok Athavale, Nucor Steel Memphis Inc; Judy Qiujin Li, ClevelandCliffs

Monday AM | September 29, 2025
D281 | Convention Center

Session Chairs: Yashwanth Injeti, Big River Steel; Tracy Lingafelter, Enerfab

---

9:00 AM
Numerical Investigation of Continuous Casting Parameters on Slag Entrapment and Surface Quality in 304 Stainless Steel: *Xuexia Song*[1]; Kun Dou[1]; Jingzhou Lu[1]; Wanlin Wang[1]; [1]Central South University, China

9:20 AM
A Novel Lab Scale Casting Simulator to Quantify Submerged Entry Nozzle Clogging: *Naziru Fuseini*[1]; Ronald O'Malley[1]; Todd Sander[1]; Jeffrey Smith[1]; Haiming Wen[1]; Laura Bartlett[1]; [1]Missouri University of Science and Technology

9:40 AM
Modeling Weld Oxygen Transfer in Submerged Arc Welding of High Strength Low Alloy Steels Using a Process Informed CALPHAD Method: *Thomas Avey*[1]; Daniel Bechetti[1]; Charles Fisher[2]; [1]Naval Surface Warfare Center Carderock; [2]Office of Naval Research

10:00 AM Break

10:20 AM
Role of Magneto-Elastic Effects in the Nucleation Behavior and Microstructural Evolution in Austenite (γ) – Ferrite (α) Transformation in Fe-C Alloys: A Quantitative Phase-Field Modeling Approach: *Soumya Bandyopadhyay*[1]; Michael Tonks[1]; [1]University of Florida

10:40 AM
Enhancing Property Prediction in Steel Alloys Through Quantitative Microstructural Data: *Malavikha Rajivmoorthy*[1]; Patrick Cleaver[2]; [1]Cleveland Cliffs Research and Innovation Center; [2]Cleveland-Cliffs Steel Corporation

11:00 AM
Numerical Study of Flow Behavior in an Industrial RH Degasser Using a VOF-DPM Method: *Nihal Saji*[1]; Xipeng Guo[1]; Kiranchandru Lingeswaran[1]; Nicholas Walla[1]; Armin Silaen[1]; Rudolf Moravec[2]; Chenn Zhou[1]; [1]Purdue University Northwest; [2]U.S. Steel

11:20 AM
Thermal Analysis Methods for Molten Steels and Thermite Welds by Optical Emission: *Maria Beldouque Correa*[1]; Hugo Barragan Vargas[1]; Aniqa Lim[1]; Lori Hathon[2]; Ricardo Cuenca Alvarez; Shelton Taylor[2]; Francisco Robles Hernandez[2]; [1]University of Houston, Cullen College of Engineering, Technology Division; [2]University of Houston

11:40 AM
Study on the Thermal Stress and Thermal Crack Formation Behaviors in Ferritic-Silicon Steels and Austenitic Manganese Steels: *Yeon-Seok Kim*[1]; Soo-Hyun Kim[1]; Chang-Gon Jeong[1]; Kyungchul Cho[2]; Jae Sang Lee[1]; Yoon-Uk Heo[1]; [1]POSTECH; [2]POSCO

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Advances in Materials and Systems for a Hydrogen Economy — Hydrogen Fuel in Aerospace Sectors, and Progress in Hydrogen Production by Electrochemical Method - Technical Advances and Obstacles

Sponsored by: ACerS Manufacturing Division, ACerS Refractory Ceramics Division

Program Organizers: Manoj Mahapatra, University of Alabama-Birmingham; James Hemrick, Oak Ridge National Laboratory; John Hardy, Pacific Northwest National Laboratory; Jorgen Rufner, Idaho National Laboratory

Monday AM | September 29, 2025
B246 | Convention Center

Session Chairs: Zhien Liu, University of North Dakota EERC; Brian Gorman, Collorado School of Mines; Jie Lian, Rensselaer Polytechnic Institute; Sandrine Ricote, Colorado School of Mines

8:00 AM
Hydrogen Embrittlement of a High-Strength Ni-Based Superalloy with Varying Ti/Al Ratio and Ta Content: *Martin Detrois*[1]; Yuan Tian[1]; Chris San Marchi[2]; Stoichko Antonov[1]; Paul Jablonski[1]; [1]National Energy Technology Laboratory; [2]Sandia National Laboratories

8:20 AM Invited
Hydrogen - Hydrocarbon Fuel Blends for Turbine Engines: High Temperature Material Issues: *Elizabeth Opila*[1]; [1]University of Virginia

8:50 AM Invited
High Temperature Steam Corrosion of Single Component and High Entropy Rare-Earth Phosphates: Bishnu Majee[1]; Keith Bryce[1]; Liping Huang[1]; *Jie Lian*[1]; [1]Rensselaer Polytechnic Institute

9:20 AM
Friction and Wear Characteristics of Hydrogen-Aged DLC and MoS_2 Coatings: *Julian Long*[1]; Kylie Van Meter[2]; Catherine Fidd[1]; Santiago Lazarte[1]; Craig Barbour[1]; Joshua Turner[1]; Yan Xin[3]; Tomas Babuska[2]; William Oates[1]; Fumitake Kametani[1]; James Schall[4]; Nicolas Argibay[5]; Brandon Krick[1]; [1]FAMU-FSU College of Engineering; [2]Sandia National Laboratories; [3]National High Magnetic Field Laboratory; [4]North Carolina Agriculture &Technical State University; [5]AMES National Laboratory

9:40 AM Invited
Research Advancement of Proton Conducting Solid Oxide Electrolysis Cells (p-SOEC) for Hydrogen Production at Idaho National Laboratory: *Dong Ding*[1]; [1]Idaho National Laboratory

10:10 AM Break

10:30 AM Invited
Advanced Materials for Low-Temperature Oxygen-Ion Conducting Solid Oxide Electrolysis Cell for Hydrogen Production: Zhijun Liu[1]; Benjamin Peterson[2]; Micah Midgett[3]; Xuefei Zhang[2]; Weining Wang[1]; Kaiwen Wang[1]; Nicholas Stanislowski[2]; Meilin Liu[1]; Jiahong Zhu[3]; *Zhien Liu*[2]; [1]Georgia Institute of Technology ; [2]University of North Dakota; [3]Tennessee Tech University

11:00 AM Invited
Chemical Modulation of Grain Boundaries and Electrochemical Interfaces for Enhanced Performance: *Harry Tuller*[1]; Thomas Defferriere[1]; Han Gil Seo[1]; Masahiro Yasutake[2]; Zijie Sha[1]; [1]Massachusetts Institute of Technology; [2]Kyushu University

11:30 AM
Solar Thermoelectrochemical Hydrogen Production Using Reversible Electrolysis and Its Immediate Impact in AI Data Centers, Automotive, and Space Technology: *Xueyan Song*[1]; Cesar-Octavio Romo-De-La-Cruz[1]; Yun Chen[1]; [1]West Virginia University

MODELING

Advances in Multiphysics Modeling and Multi-Modal Imaging of Functional Materials — Operator Learning / Phase-Field Modeling

Sponsored by: ACerS Basic Science Division

Program Organizers: Jiamian Hu, University of Wisconsin Madison; Massimo Ghidini, University of Parma; Wenrui Hao, The Pennsylvania State University; Di Qi, Purdue University

Monday AM | September 29, 2025
B244/245 | Convention Center

Session Chairs: Wenrui Hao, Pennsylvania State University; Jiamian Hu, University of Wisconsin-Madison; Yanzhou Ji, Ohio State University

8:00 AM Keynote
From Centralized to Federated Learning of Neural Operators: Accuracy, Scalability, and Reliability: *Lu Lu*[1]; [1]Yale University

8:40 AM Keynote
Operator Learning Neural Scaling and Distributed Applications: *Zecheng Zhang*[1]; Wenjing Liao[2]; Hayden Schaeffer[3]; Hao Liu[4]; Guang Lin[5]; [1]University of Notre Dame; [2]Georgia Institute of Technology; [3]University of California Los Angeles; [4]Hong Kong Baptist University; [5]Purdue University

9:20 AM Keynote
Operator Learning Arising from Multiphysics Modeling: *Wenrui Hao*[1]; [1]Penn State University

10:00 AM Break

10:20 AM Invited
Phase-Field Modeling Coupled with FFT-Based Crystal Plasticity for Recrystallization Dynamics Driven by Geometrically Necessary Dislocations in Gradient Grained Metals: *Lei Chen*[1]; Xinxin Yao[1]; Hossein Abbasi[1]; [1]University of Michigan Dearborn

10:45 AM Invited
Phase-Field Modeling of Optical Properties in Ferroelectric Materials: *Aiden Ross*[1]; Long-Qing Chen[1]; [1]Penn State University

11:10 AM Invited
Diffusion Under Variable Molar Volume: Continuum Theory and Phase-Field Modeling: Chengyin Wu[1]; *Yanzhou Ji*[1]; [1]The Ohio State University

11:35 AM Invited
Interaction Between Terahertz Waves and Ferroelectric Materials: Analytical Model and Dynamic Phase-Field Simulations: *Yujie Zhu*[1]; Jiamian Hu[1]; [1]University of Wisconsin Madison

PROCESSING AND MANUFACTURING

Alloy Phase Transformations at Elevated Temperatures — Ni-Based Superalloys

Sponsored by: TMS: High Temperature Alloys Committee, TMS: Phase Transformations Committee

Program Organizers: Dinc Erdeniz, University of Cincinnati; Mark Aindow, University of Connecticut; Jonathan Priedeman, GE Aerospace; Vahid Tari, ATI - Allegheny Technologies Incorporated

Monday AM | September 29, 2025
B232 | Convention Center

Session Chair: Dinc Erdeniz, University of Cincinnati

8:00 AM Invited
Strengthening Superalloys via Locally Transformed Two-Dimensional Defect Phases: *Andreas Bezold*[1]; Jan Vollhüter[2]; Lukas Amon[2]; Longsheng Feng[3]; Nicolas Karpstein[2]; Erdmann Spiecker[2]; Yunzhi Wang[1]; Steffen Neumeier[2]; Michael Mills[1]; [1]The Ohio State University; [2]Friedrich-Alexander-Universität Erlangen-Nürnberg; [3]Lawrence Livermore National Laboratory

8:30 AM
Heterogenous Nucleation of γ' Precipitates at Annealing Twin Boundaries in Superalloys: A Phase Field Study: *Vignesh Karunakaran*[1]; Longsheng Feng[2]; Semanti Mukhopadhyay[1]; Hariharan Sriram[1]; Fei Xue[3]; Emmanuelle Marquis[3]; Michael Mills[1]; Yunzhi Wang[1]; [1]The Ohio State University; [2]Lawrence Livermore National Laboratory; [3]University of Michigan

8:50 AM
Revealing the Origin of Twin Boundary-Induced Phase Transformation within L1 Precipitate in Ni-Based Superalloys: *Jae Bok Seol*[1]; Joong Eun Jung[2]; Won-Seok Ko[3]; Jae-Hoon Jang[4]; Jong Bae Jeon[5]; Jae Wung Bae[6]; Hyokyung Sung[1]; Hyoung Seop Kim[7]; [1]Kookmin University; [2]Korea Institute of Materials Science (KIMS); [3]Inha University; [4]Korea Institute of Materials Science; [5]Dong-A University; [6]Pukyong National University; [7]Pohang University of Science and Technology

9:10 AM
Study of the Effect of Two Different Regeneration Heat Treatments in a Nickel-Based Alloy System: *J. Emiliano Resendiz-Hernandez*[1]; Erika O. Avila-Davila[1]; Edgar E. Verea-Cardenas[1]; Armando I. Martinez-Perez[1]; Nicolas Cayetano-Castro[1]; Hugo Martinez-Gutierrez[1]; Hector Dorantes-Rosales[1]; [1]Tecnológico Nacional de México-Pachuca

9:30 AM
Cooling-Rate-Driven Microstructural Evolution in Novel Ni-Based Cr-Fe-Al-Ti Alloys: *Rakhmatjon Gaipov*[1]; Elyorjon Jumaev[1]; Omon Sultonov[1]; Jakhongir Bakirov[1]; Mukhiddin Abduazimov[1]; Nilufarkhon Sattarova[1]; Ki Buem Kim[2]; [1]University of Business and Science; [2]Sejong University

9:50 AM Break

10:10 AM
Effect of Copper Addition on High-Temperature Mechanical Properties of Ni-Based Multi-Principal Element Alloys: *Elyorjon Jumaev*[1]; Rakhmatjon Gaipov[1]; Omon Sultonov[1]; Amir Abidov[2]; Farkhod Abdullaev[2]; Ki Buem Kim[3]; [1]University of Business and Science; [2]Uzbekistan Technological Metals Complex JSC; [3]Sejong University

10:30 AM
Investigation of Hot workability and Dynamic Recrystallization of a Wrought R65 Nickel-Based Superalloy: *Vahid Tari*[1]; David J. Bryan[1]; Hossein Beladi[2]; [1]ATI Specialty Materials; [2]Deakin University

10:50 AM
Effect of Thermal Cycling on Coarsening Kinetics of L12 of a Ni-Based Superalloy: *Sharat Chandra*[1]; Rajesh Kumar Rai[1]; [1]Malaviya National Institute of Technology

FUNDAMENTALS AND CHARACTERIZATION

Emergent Materials Under Extremes and Decisive In Situ Characterizations — In Situ Technologies Combined with Extreme Conditions

Sponsored by: ACerS Basic Science Division

Program Organizers: Xiaofeng Guo, Washington State University; Hua Zhou, Argonne National Laboratory; Xujie Lu, Center for High Pressure Science & Technology Advanced Research; Judith Driscoll, University of Cambridge; Andrew Strzelecki, Los Alamos National Laboratory

Monday AM | September 29, 2025
C162A | Convention Center

Session Chair: Zhou Hua, Argonne National Laboratory

8:00 AM Invited
High Temperature Creep, Plasticity and Failure; New Insights from In Situ TEM: *Shen Dillon*[1]; [1]University of California, Irvine

8:30 AM
In-Situ Neutron Diffraction-Based Creep Evaluation of Co- and Ni-Based Superalloys Produced by Laser Powder Bed Fusion: *Noah Holtham*[1]; Patxi Fernandez-Zelaia[1]; Frank Brinkley[1]; Christopher Fancher[1]; Christopher Ledford[1]; Ning Zhou[2]; Stéphane Forsik[2]; Tresa Pollock[3]; Michael Kirka[1]; [1]Oakridge National Laboratory; [2]Carpenter Technology Corporation; [3]University of California, Santa Barbara

8:50 AM
Quantifying Micromechanical Behavior of Fe-36Ni Invar Alloy in Low-Temperature Conditions Using 3D X-Ray Diffraction: Raghul Asokkumar[1]; *Darren Pagan*[1]; [1]Pennsylvania State University

9:10 AM Invited
Exploring Catalytic Pathways Using Advanced X-Ray Spectroscopy Techniques: *Chengjun Sun*[1]; Di-Jia Liu[1]; [1]Argonne National Laboratory

9:30 AM Invited
In Situ Characterization of Rare Earth Element Complexation and Crystallization Pathways in Hydrothermal Fluids Under Extreme Conditions: *Xin Zhang*[1]; [1]Pacific Northwest National Laboratory

9:50 AM Break

10:10 AM Invited
Studies of Quantum Materials Under High Pressure: *Wenli Bi*[1]; [1]University of South Carolina

10:40 AM Invited
Dynamic Behavior of Porous Materials Under Shock Loading: *Jonathan Lind*[1]; [1]Lawrence Livermore National Laboratory

11:00 AM
Pressure-Induced Changes in the Density and Local Structure of GeO2 Glass Under High Pressure: *Xinguo Hong*[1]; Kevin Hong[2]; [1]Center for High Pressure Science & Technology Adva; [2]Earl L. Vandermeulen High School

11:20 AM
Approaches to Functional High-Pressure Phases: Pressure Aging and Structural Mimicry: *Xujie Lu*[1]; [1]Center for High Pressure Science & Technology Advanced Research

---

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Energy Materials for Sustainable Development — Battery and Storage I

Sponsored by: ACerS Energy Materials and Systems Division

Program Organizers: Sepideh Akhbarifar, The Catholic University of America -Vitreous State Lab; Jianhua Tong, Clemson University; Yang Bai, University of Oulu; Eva Hemmer, University of Ottawa; Charmayne Lonergan, Missouri University of Science and Technology; Armin Feldhoff, Leibniz University Hannover; Takayoshi Katase, Institute of Science Tokyo; Bed Poudel, Pennsylvania State University; Ekaterina Pomerantseva, Drexel University; Kai He, University of California, Irvine

Monday AM | September 29, 2025
B234 | Convention Center

Session Chairs: Kai He, University of California, Irvine; Jianhua Tong, Clemson University

---

8:00 AM Session Introduction: Join us in Room B235 for the D.T. Rankin Awardee followed by Keynote Presentation with Takao Mori, National Institute for Materials Science

9:00 AM Invited
Dielectric Interfaces for Accelerating Charge Transfer in Secondary Batteries: *Takashi Teranishi*[1]; [1]Okayama University

9:30 AM Invited
Enhancing Battery Performance Through Structural Design of Wadsley-Roth Shear Phases: C.J. Sturgill[1]; Sean Wechsler[1]; Iva Milisavljevic[2]; Md Abdullah Al Muhit[1]; Manish Kumar[1]; Hans-Conrad zur Loye[1]; Christopher Sutton[1]; *Scott Misture*[2]; Morgan Stefik[1]; [1]University of South Carolina; [2]Alfred University

10:00 AM Break

10:20 AM Invited
New Cathode Chemistries and Electrochemical Mechanisms to Advance Batteries: *Juhyeon Ahn*[1]; [1]University of Wyoming

10:50 AM Invited
Visualizing Solid-State Reactions in Batteries Using Advanced Transmission Electron Microscopy: *Kai He*[1]; [1]University of California, Irvine

11:20 AM Invited
A Water-Based Lithium-Ion Solid-State Battery with an Easy Direct-Recycling System: *Shintaro Yasui*[1]; Yosuke Shiratori[1]; [1]Institute of Science Tokyo

11:50 AM
Understanding the Reaction Pathway in Conversion Cathodes: *Jordan Sweeney*[1]; Eve Mozur[1]; [1]Colorado School of Mines

---

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Energy Materials for Sustainable Development — Thermoelectrics I

Sponsored by: ACerS Energy Materials and Systems Division

Program Organizers: Sepideh Akhbarifar, The Catholic University of America -Vitreous State Lab; Jianhua Tong, Clemson University; Yang Bai, University of Oulu; Eva Hemmer, University of Ottawa; Charmayne Lonergan, Missouri University of Science and Technology; Armin Feldhoff, Leibniz University Hannover; Takayoshi Katase, Institute of Science Tokyo; Bed Poudel, Pennsylvania State University; Ekaterina Pomerantseva, Drexel University; Kai He, University of California, Irvine

Monday AM | September 29, 2025
B235 | Convention Center

Session Chairs: Sepideh Akhbarifar, The Catholic University of America -Vitreous State Lab; Armin Feldhoff, Leibniz University Hannover

---

8:00 AM Introductory Comments: D.T. Rankin Awardee

8:20 AM Keynote
High Performance Thermoelectric Materials & Various Device Formats for Power Generation: *Takao Mori*[1]; [1]National Institute for Materials Science

9:00 AM Invited
Advancing Misfit-Layered Calcium Cobaltite: Boosting Thermoelectric Efficiency Through Electrospun Nanoribbons and Spark Plasma Texturing: *Armin Feldhoff*[1]; Katharina Kruppa[1]; Itzhak Maor[2]; Anat Karlin[2]; Kristina Kebel[1]; Frank Steinbach[1]; Hilke Petersen[1]; Dorothea Stobitzer[3]; Wenjie Xie[4]; Anke Weidenkaff[4]; Gennady Shter[2]; Meirav Mann-Lahav[2]; Gideon Grader[2]; [1]Leibniz University Hannover; [2]Technion - Israel Institute of Technology; [3]NETZSCH-Gerätebau GmbH; [4]Technical University of Darmstadt

9:30 AM
Designing the Intergranular Phase for Decoupling the Strongly Correlated Thermoelectric Parameters in Perovskite Oxide Ceramics: *Cesar-Octavio Romo-De-La-Cruz*[1]; Sergio-Andres Paredes-Navia[1]; Yun Chen[1]; Xueyan Song[1]; [1]West Virginia University

9:50 AM Invited
Pushing the Boundaries in Thermoelectrics: Intergranular Engineering at Atomic and Nano Scales to Achieve the Oxide Ceramics with ZT>1: *Xueyan Song*[1]; Cesar-Octavio Romo-De-La-Cruz[1]; Yun Chen[1]; [1]West Virginia University

10:20 AM Break

10:40 AM Invited
Tuning Thermal Transport in Perovskite Oxides via Defect and Strain Engineering: *Sepideh Akhbarifar*[1]; Mohammad El Loubani[2]; Md Shafkat Bin Hoque[3]; Scott Bender[3]; Dongkyu Lee[2]; Patrick Hopkins[3]; [1]Catholic University of America -Vitreous State Lab; [2]University of South Carolina; [3]University of Virginia

11:10 AM
A New Path for Thermoelectric Ceramics: Additive Manufacturing of Misfit Oxides: *Ellena Gemmen*[1]; Cesar-Octavio Romo-De-La-Cruz[1]; Yun Chen[1]; Xueyan Song[1]; [1]West Virginia University

11:30 AM
High Thermoelectric Seebeck Coefficient in $DyCoO_3$ and Processing Optimization for Its Potential Application in Energy Conversion: *Geoffroy Gauneau*[1]; Cesar-Octavio Romo-De-La-Cruz[1]; Fuming Jiang[1]; Xueyan Song[1]; [1]West Virginia University

ARTIFICIAL INTELLIGENCE

Enhancing the Accessibility of Machine Learning-Enabled Experiments — Advancing Materials Research with Foundational Models

Sponsored by: ACerS Basic Science Division

Program Organizers: Yongtao Liu, Oak Ridge National Laboratory; Arpan Biswas, University of Tennessee

Monday AM | September 29, 2025
D283 | Convention Center

Session Chairs: Yongtao Liu, Oak Ridge National Laboratory; Arpan Biswas, University of Tennessee Oak Ridge Innovation Institute

9:00 AM Invited
DiffractGPT: Atomic Structure Determination from X-Ray Diffraction Patterns Using a Generative Pretrained Transformer: *Kamal Choudhary*[1]; [1]National Institute of Standards and Technology

9:30 AM
Hypothesis Formation and Predictive Modeling of 2D Perovskite Spacer Cations Using Retrieval Augmented LLMs and Deep Kernel Learning: *Jordan Marshall*[1]; Elham Foadian[1]; Sheryl Sanchez[1]; Utkarsh Pratiush[1]; Rushik Desai[2]; Mahshid Ahmadi[1]; Sergei Kalinin[1]; Arun Kanakkithodi[2]; [1]University of Tennessee; [2]Purdue University

9:50 AM Break

10:10 AM Invited
ATOMIC: Autonomous Characterization of 2D Materials Through Foundation Models: *Haozhe "Harry" Wang*[1]; [1]Duke University

10:40 AM Invited
Autonomous Atomic Force Microscopy Using Large Language Model Agents: *N M Anoop Krishnan*[1]; Indrajeet Mandal[1]; [1]Indian Institute of Technology Delhi

11:10 AM
Foundational Workflows for Processing Legacy Data and Realizing Domain-Specific Multi-Modal AI Models: *Kevin Le*[1]; Andrew Richards[1]; Robert Hackenberg[1]; [1]Los Alamos National Laboratory

CERAMIC AND GLASS MATERIALS

Glasses and Optical Materials: Challenges, Advances, and Applications — Glass Formation and Manufacturing

Sponsored by: ACerS Glass and Optical Materials Division

Program Organizers: Morten Smedskjaer, Aalborg University; N. M. Anoop Krishnan, Indian Institute of Technology Delhi

Monday AM | September 29, 2025
B132 | Convention Center

Session Chairs: Morten Smedskjaer, Aalborg University; N. M. Anoop Krishnan, IIT Delhi

8:00 AM Invited
Accessing Glass Forming Ability via Experiments, Theoretical Calculations, and Computer Simulations: *Edgar Zanotto*[1]; [1]Federal University of Sao Carlos

8:30 AM
Time-Temperature-Transformation Diagram Development for a Coupled-Operation Glass Composition with SWPF: *Matthew Page*[1]; Fabienne Johnson[1]; Nicodemus Rod[1]; Madison Hsieh[1]; [1]Savannah River National Laboratory

8:50 AM
Liquidus Temperature of Phosphate Crystalline Phases in Borosilicate Waste Glasses: *Jincheng Bai*[1]; Jarrod Crum[1]; Xiaonan Lu[1]; John Vienna[1]; Albert Kruger[2]; [1]Pacific Northwest National Laboratory; [2]U.S. Department of Energy

9:10 AM Invited
LionGlass™: A Low Carbon Footprint Alternative to Soda Lime Silicate Glass: *John Mauro*[1]; [1]Pennsylvania State University

9:40 AM
LionGlass™: Development and Assessment as a Sustainable, High-Performance Glazing Material: *Mehmet Arda Ozay*[1]; Nicholas Clark[1]; Mohammad Elmi[1]; Elif Pinar Akman-Ozay[1]; Julian Wang[1]; John Mauro[1]; [1]Penn State University

10:00 AM Break

10:20 AM
Recycling LionGlass™: Optical and Elemental Sorting for Sustainable Glass Manufacturing: *Elif Pinar Akman-Ozay*[1]; Nicholas Clark[1]; Mehmet Arda Ozay[1]; John C. Mauro[1]; [1]Penn State University

10:40 AM
In the World of Borosilicate Glass: Applications and Challenges of the Past, the Presence and the Future: *Juliane Brandt-Slowik*[1]; [1]SCHOTT Technical Glass Solutions GmbH

11:00 AM
New Synthesis of Blue and Purple Pigments from Pyrex -Type Glass: *Jacob Hormadaly*[1]; [1]Ben Gurion University

FUNDAMENTALS AND CHARACTERIZATION

Grain Boundaries, Interfaces, and Surfaces: Fundamental Structure-Property-Performance Relationships — Sintering & Grain Growth and Modeling

Sponsored by: ACerS Basic Science Division

Program Organizers: Melissa Santala, Oregon State University; Catherine Bishop, University of Canterbury; Klaus van Benthem, The University of Alabama; Wayne Kaplan, Technion - Israel Institute of Technology

Monday AM | September 29, 2025
C161A | Convention Center

Session Chairs: Craig Carter, Massachusetts Institute of Technology; Melissa Santala, Oregon State University

8:00 AM Invited
Evidence for Accelerated Grain Boundary Diffusion During Ultrafast Firing (UHS) of Alumina: Zonghao Guo[1]; *Richard Todd*[1]; [1]University of Oxford

8:30 AM
4D Observations of Grain Growth in Polycrystalline Alumina: *Hailey Hall*[1]; Daniel DeLellis[1]; Michael Kesler[2]; Amanda Krause[1]; [1]Carnegie Mellon University; [2]Oak Ridge National Laboratory

8:50 AM
Correlating Atomic Structure to Velocity of Grain Boundaries in Metal Oxides: *Mehmet Can Dursun*[1]; Hailey Hall[1]; Amanda Krause[1]; [1]Carnegie Mellon University

9:10 AM
Sub-Grain Boundary Dynamics During Early-Stage Recrystallization in High-Purity Aluminum: *Zehua Liu*[1]; Marc DeGraef[1]; [1]Carnegie Mellon University

9:30 AM
Influence of the Duplex $CoTiO_3$-TiO_2 Microstructure on the Nucleation and Growth of Entropy-Stabilized $CoTi_2O_5$: *Koen Verrijt*[1]; Junyan Zhang[1]; Jeffrey Rickman[1]; Helen Chan[1]; [1]Lehigh University

9:50 AM Break

10:10 AM Invited
Using Interface Layer Quantities to Compute Unambiguous Thermodynamic Quantities From Atomic Data Sets: *W Craig Carter*[1]; Catherine Bishop[2]; [1]Massachussetts Institute of Technology; [2]University of Canterbury

10:40 AM
Atomistic Modeling of Structure and Tritium Transport in Fe-Al-Cr Quasicrystal Phase: *Kashi Subedi*[1]; Krishna Pitike[1]; Matthew Olszta[1]; David Senor[1]; Ayoub Soulami[1]; Andrew Casella[1]; [1]Pacific Northwest National Laboratory

11:00 AM
Atomic and Electronic Structure of Impurity-Segregated Grain Boundaries in \945-Al_2O_3: *Tatsuya Yokoi*[1]; Yu Ogura[1]; Katsuyuki Matsunaga[1]; [1]Nagoya University

11:20 AM
Neural-Network Potential Based on Trainable Descriptor for Modeling Complex Interfacial Structures and Properties: *Masami Uchida*[1]; Tatsuya Yokoi[1]; Yu Ogura[1]; Katsuyuki Matsunaga[1]; [1]Nagoya University

11:40 AM Invited
In-Situ Characterization of Interface Evolution During Zinc Electrodeposition in Alkaline Electrolytes: *Ming Tang*[1]; [1]Rice University

FUNDAMENTALS AND CHARACTERIZATION

High-Entropy Materials: Solid Solutions, Intermetallics, Ceramics, Functional Materials and Beyond VI — Physics-Based Models

Sponsored by: TMS: Alloy Phases Committee, ACerS Basic Science Division

Program Organizers: Shuozhi Xu, University of Oklahoma; Yiquan Wu, Alfred University; Yu Zhong, Worcester Polytechnic Institute; Michael Gao, National Energy Technology Laboratory; Xingbo Liu, West Virginia University; Peter Liaw, University of Tennessee; Jian Luo, University of California, San Diego; Mitra Taheri, Johns Hopkins University; Amy Clarke, Los Alamos National Laboratory

Monday AM | September 29, 2025
C170 | Convention Center

Session Chairs: Yunzhi Wang, Ohio State University; Dilpuneet Aidhy, Clemson University

8:00 AM Invited
Microstructural Engineering for Multi-Phase High-Entropy Alloys: Shiddhartha Ramprakash[1]; Brian Welk[1]; Paraic O'Kelly[1]; Hamish Fraser[1]; *Yunzhi Wang*[1]; [1]Ohio State University

8:30 AM Invited
Better, Faster Alloy Simulations: An Improved Hybrid MC/MD Algorithm for LAMMPS: *Megan McCarthy*[1]; Aidan Thompson[1]; [1]Sandia National Laboratories

9:00 AM Invited
Molecular Dynamic Studies of Strain Rate Effects on Screw Dislocation Mobility and Glide Mechanisms in BCC Complex Concentrated Alloys: Subhendu Chakraborty[1]; *Liang Qi*[1]; [1]University of Michigan

9:30 AM
Electronic Structure Origin of the B2 Phase Stability Among Refractory Metals: *Ali Barooni*[1]; Maryam Ghazisaeidi[1]; [1]The Ohio State University

9:50 AM Break

10:10 AM Invited
Electronic Structure, a Fundamental Descriptor of Elastic and Plastic Properties in BCC Refractory Alloys: Dharmendra Pant[1]; *Dilpuneet Aidhy*[1]; [1]Clemson University

10:40 AM Invited
Larger Than Uncorrelated Diffusion Contributions in Disordered Materials: *Soham Chattopadhyay*[1]; Blas Uberuaga[1]; [1]Los Alamos National Laboratory

11:10 AM Invited
Lattice Distortion Due to Oxygen Vacancies in MgO-Based High Entropy Oxides From DFT: *Oriyomi Opetubo*[1]; Dilpuneet Aidhy[1]; [1]Clemson University

MATERIALS-ENVIRONMENT INTERACTIONS

High-Temperature Corrosion and Degradation of Materials — High-Temperature Corrosion and Degradation of Materials

Sponsored by: TMS: Corrosion and Environmental Effects Committee

Program Organizers: Richard Oleksak, National Energy Technology Laboratory; Kinga Unocic, Oak Ridge National Laboratory; David Shifler, Office of Naval Research; Raul Rebak, GE Global Research

Monday AM | September 29, 2025
D182 | Convention Center

Session Chair: To Be Announced

8:00 AM
Predicting Passivity of Refractory High Entropy Alloys: *David Shifler*[1]; [1]Office of Naval Research

8:20 AM
Effects of Steam, Carbon Dioxide, and Oxygen Potential on the Early-Stage Oxidation Behavior of Ni-Based Alloys: *Jonathan Locker*[1]; Brian Gleeson[1]; [1]University of Pittsburgh

8:40 AM
Steam Oxidation and Environmental Effects on Zr-Nb Alloys: *Sean Li*[1]; Chaitanya Deo[1]; Remi Dingreville[2]; Scott Monismith[2]; Preet Singh[1]; [1]Georgia Institute of Technology; [2]Sandia National Laboratories, Center for Integrated Nanotechnologies

9:00 AM
Selective Oxidation of Sm in SmCo-Based Magnets: Kinetics and Mechanisms: *Mitchell Harvey*[1]; Courtney Young[1]; Mario Caccia[2]; [1]Montana Technological University; [2]Alfred University

9:20 AM
Erosion Resistant Effect on Engine Valvetrain Performance: *C Paul Qiao*[1]; Jake Beavers[1]; Dan Tanguay[1]; [1]L.E. Jones

9:40 AM
Optimizing Conditions for Environmental Barrier Coating Testing in High-Temperature, High-Velocity Steam Environments: *Matthew Caulfield*[1]; Elizabeth Opila[1]; [1]University of Virginia

10:00 AM Break

10:20 AM
Quantitative Analysis and 3D Structure of High-Temperature Steam-Induced Porosity in Rare-Earth Disilicates for Environmental Barrier Coating Applications: *Marcus Lam*[1]; Chathuranga Witharamange[1]; Elizabeth Opila[1]; [1]University of Virginia

10:40 AM
Evaluating Steam Stability of Xenotime-Inspired Rare Earth Orthophosphate Environmental Barrier Coatings: *Imoen Hawthorne*[1]; Elizabeth Opila[1]; [1]University of Virginia

11:00 AM
Design and Performance Testing of Low-Cost Multicomponent Rare Earth Disilicate Environmental Barrier Coatings: *Richard Oleksak*[1]; Casey Carney[1]; Shiqiang Hao[1]; Michael Gao[1]; Kenneth Kane[2]; [1]National Energy Technology Laboratory; [2]Johns Hopkins University Applied Physics Laboratory

ARTIFICIAL INTELLIGENCE

Materials Informatics for Images and Multi-Dimensional Datasets — Materials Informatics for Images and Multi-Dimensional Datasets I

Sponsored by: ACerS Basic Science Division, ACerS Electronics Division

Program Organizers: Amanda Krause, Carnegie Mellon University; Daniel Ruscitto, GE Aerospace Research; Alp Sehirlioglu, Case Western Reserve University; Roger French, Case Western Reserve University; Erika Barcelos, Case Western Reserve University

Monday AM | September 29, 2025
D282 | Convention Center

Session Chair: Amanda Krause, Carnegie Mellon University

8:00 AM Invited
Nanocrystalline Films: Imaging, Orientation Mapping, Machine Learning and Data Analytics: *Katayun Barmak*[1]; Jeffrey Rickman[2]; [1]Columbia University; [2]Lehigh University

8:30 AM

3D Data Pipelines and Workflows to Mesh Experimental and Computational Results: *Paul Chao*[1]; Chad Hovey[1]; Brian Phung[1]; Ashley Spear[2]; Kyle Karlson[1]; John Emery[1]; Andrew Polonsky[1]; [1]Sandia National Laboratories; [2]University of Utah

8:50 AM Invited
Harnessing of Photodiode Signals to Predict Mechanical Properties in Laser Powder Bed Fusion Additive Manufacturing: *Allison Beese*[1]; [1]Pennsylvania State University

9:20 AM Invited
Mapping Microstructure: Manifold Construction and Exploitation for Accelerated Materials Discovery: *Stephen Niezgoda*[1]; Simon Mason[1]; Jeff Simmons[2]; Megna Shah[2]; [1]The Ohio State University; [2]U.S. Air Force Research Laboratory

9:50 AM
Non-Destructive 3D Characterization of Structural Failures Using X-Ray Computed Tomography: *Tai-Jan Huang*[1]; Angela Criswell[1]; [1]Rigaku Americas Corporation

NANOMATERIALS

Nanotechnology for Energy, Environment, Electronics, Healthcare and Industry — Nanotechnology for Energy, Environment, Electronics, Healthcare and Industry - Session I

Sponsored by: ACerS Other

Program Organizers: Navin Manjooran, Solve; Gary Pickrell, Virginia Tech

Monday AM | September 29, 2025
B240/241 | Convention Center

Session Chairs: Gary Pickrell, Virginia Tech; Navvin Manjooran, Solve

8:00 AM Introductory Comments

9:00 AM
Surface Modification of Nanoclay Using Low Plasma Irradiation for Environmental Remediation: *Paulo Henrique Camani*[1]; Sushrisangita Sahoo[1]; Abhinav Yadav[1]; Derval Rosa[2]; Lucia Helena Innocentini Mei[3]; Vijaya Kumar Rangari[1]; [1]Tuskegee University; [2]Federal University of ABC; [3]State University of Campinas

9:20 AM
Exploring Nb2O5:CuBi2O4 for Photocatalysis in the Visible Region: *Margaret Dawson*[1]; Luciana Cutrim[1]; Felipe Rodrigues Silva[1]; Mayara Coelho Sa[1]; Edson Tobias de Jesus[1]; Gilmar da Silva[1]; [1]Instituto Federal de Educação Ciência e Tecnologia do Maranhão

9:40 AM
Novel Sweet Spot Techniques in Imaging and Analyzing Battery Materials in the FE-SEM Enhanced by AI-Based Particle Characterization: *Andy Holwell*[1]; Ria Mitchell[1]; [1]Carl Zeiss Microscopy LLC

10:00 AM Break

10:20 AM
Green Synthesis of Nanostructured MgO Using Tropical Foliage Extracts (Siamweed) for Multifunctional Applications: Photocatalysis and Antimicrobial Properties: *Esther Ikhuoria*[1]; Godfrey Otabor[2]; Joshua Onaifo[2]; Ikhazuagbe Ifijen[3]; [1]University of Benin; [2]Ambrose Alli University; [3]Rubber Research Institute of Nigeria

10:40 AM
Stabilizing High-Valent Mn Single Atoms on Defect-Rich CeO Nanoislands to Enhance N Selectivity and SO Resistance in Ultra-Low-Temperature NH-SCR Process: *Feibin Wei*[1]; Taotao Hu[1]; [1]Northwestern Polytechnical University

11:00 AM
Nanorobotics for Early Detection and Targeted Treatment of Pancreatic Ductal Adenocarcinoma: *Kate Fox*[1]; Shawn Goussous[2]; Melissa Stanfield[1]; William Louis[1]; Nhiem Tran[1]; [1]RMIT University; [2]Nanocube Health

11:20 AM Concluding Comments

BIOMATERIALS

Next Generation Biomaterials — Next Generation Biomaterials I

Sponsored by: ACerS Bioceramics Division, TMS: Biomaterials Committee

Program Organizers: Roger Narayan, University of North Carolina; Tanveer Tabish, University of Oxford

Monday AM | September 29, 2025
C171 | Convention Center

Session Chairs: Enrico Bernardo, University of Padua; Masahiro Yoshimura, National Cheng Kung University

8:00 AM Invited
Direct Formation of Bio-Active Ceramic Coating on Titanium based Metallic Alloys via Growing Integration Layer [GIL] Strategy: *Masahiro Yoshimura*[1]; Chi-Huang Huang[2]; [1]Tokyo Institute of Technology; National Cheng Kung University; [2]National Cheng Kung University

8:20 AM Invited
Porous Graphene Nanomaterials for Vascular Delivery of Nitric Oxide: *Tanveer Tabish*[1]; [1]University of Oxford

8:40 AM Invited
Lipid-functionalized Hybrid Nanocarriers for Precision Drug Delivery and Tumor Targeting Applications: *Sanjay Mathur*[1]; [1]University of Cologne

9:00 AM Invited
Global Young Bioceramicist Award: The Art of Biomimetic Bone Tissue Regeneration: *Antonia Ressler*[1]; [1]Tampere University

9:20 AM Invited
Bioceramics Young Scholar Award: Flow Chemistry-Governed Scale-Up of Oxide Bioceramics as Multifunctional Sunscreens for Broad-Spectrum Photoprotection: *Sayoni Sarkar*[1]; Ajit Kulkarni[2]; [1]ETH Zurich; [2]Indian Institute of Technology Bombay

9:40 AM Invited
Larry L. Hench Lifetime Award: Larry Hench's Insights and Ionic Medicine: Current and Future Opportunities for Bioactive Glasses: *Aldo Boccaccini*[1]; [1]University of Erlangen-Nuremberg

PROCESSING AND MANUFACTURING

Processing and Performance of Materials Using Microwaves, Electric and Magnetic Fields, Ultrasound, Lasers, and Mechanical Work – Rustum Roy Symposium — Rustum Roy Symposium - Session I

Sponsored by: ACerS Basic Science Division

Program Organizers: Morsi Mahmoud, Abdullah Al Salem University (AASU); Rishi Raj, University of Colorado; Motoyasu Sato, Chubu University; Dinesh Agrawal, Pennsylvania State University; Christina Wildfire, National Energy Technology Laboratory; Guido Link, Karlsruhe Institute of Technology; Daudi Waryoba, Pennsylvania State University

Monday AM | September 29, 2025
B233 | Convention Center

Session Chair: Morsi Mahmoud, Abdullah Al Salem University

8:00 AM Invited
Dual Effect of Burst-Type Alternating Electromagnetic Fields on Bacterial Proliferation and Biofilm Suppression at Low Cell Concentration: Hidekazu Miura[1]; *Hideyuki Kanematsu*[2]; Risa Kawai[3]; Takayoshi Nakano[2]; [1]Suzuka University of Medical Science; [2]Osaka University; [3]Nara Women's University

8:30 AM Invited
Graphene Infused Copper: A New State of Matter Enabled by "Flash": *Rishi Raj*[1]; Suprabha Das[1]; [1]University of Colorado

9:00 AM
Microstructural Evolution of Copper During Ultrasonic Surface Modification: Teddy Magheto[1]; Carl Boehlert[1]; Upama Biswas Tonny[1]; *Sunil Chakrapani*[1]; [1]Michigan State University

9:20 AM
Microwave-Assisted Sintering of SOEC Electrodes Materials for Accelerated Sintering Kinetics, Microstructural Development, Defect Formation, and Chemical Stability: *Javier Mena*[1]; Edward Sabolsky[1]; Katarzyna Sabolsky[1]; Tugrul Yumak[1]; Mason Cavalier[1]; Shavinka Jayasekera[1]; Geethanath Duggiralla[1]; Terence Musho[1]; Ansan Pokharel[1]; [1]West Virginia University

9:40 AM
Detecting Rare Earth Elements and Critical Transition Metals via Optically Detected Magnetic Resonance (ODMR) and Spin-Relaxometry Using Nitrogen Vacancy Centers in Nanodiamonds: *Ghadendra Bhandari*[1]; Gary Lander[1]; Matthew Brister[1]; Crawford Scott[1]; Hari Paudel[1]; Jeffrey Wuenschell[1]; Michael Buric[1]; Ruishu Wright[1]; Yuhua Duan[1]; [1]NETL

10:00 AM Break

10:20 AM Invited
Corrosion Protection of Powder Metal Parts by Cold Spray Coating of AlCrCoFeNi High Entropy Alloy: Ezeck Olinger[1]; *Daudi Waryoba*[1]; Dylan Treaster[2]; [1]Pennsylvania State University; [2]HAMR Industries LLC

10:50 AM
Influence of SiC Particles on the Mechanical Properties of Cu-Based Composite Casting Developed Through Microwave Hybrid Heating: Khalid Bashir[1]; *Dheeraj Gupta*[1]; Vivek Jain[1]; [1]Thapar Institute of Engineering and Technology Patialia Punjab

11:10 AM
Development of Femtosecond Laser-Based Purification Techniques of High-Purity Quartz for Industrial Energy Applications: *Arish Naim*[1]; Subhash Risbud[1]; [1]University of California, Davis

11:30 AM
Effects of Magnetic Field Heat Treatment on Irradiated HT9 F/M Steel: *Kirk Lemmen*[1]; Xiatong Yang[2]; Haluk Karaca[1]; Osman Anderoglu[2]; Stuart Maloy[3]; Nan Li[4]; [1]University of Kentucky; [2]University of New Mexico; [3]Pacific Northwest National Laboratory; [4]Los Alamos National Laboratory

11:50 AM
Multiphysics Simulation of Laser Welding Aluminum Structures: *Cory Webber*[1]; Jeong-Hoi Koo[1]; Carter Hamilton[1]; Hee-Shin Kang[2]; [1]Miami University; [2]Korea Institute of Machinery & Materials

CERAMIC AND GLASS MATERIALS

Solid-State Optical Materials and Luminescence Properties — Solid-State Optical Materials and Luminescence Properties

Sponsored by: ACerS Basic Science Division, ACerS Glass and Optical Materials Division

Program Organizers: Mathieu Allix, Laboratoire CEMHTI; Yiquan Wu, Alfred University; Jas Sanghera, Naval Research Laboratory; Akio Ikesue, World-Lab. Co., Ltd; Rong-Jun Xie, Xiamen University; Liangbi Su, Shanghai Institute of Ceramics; Dariusz Hreniak, Institute of Low Temperature and Structure Research; Jan Hostaša, CNR ISSMC - Institute of Science, Technology and Sustainability for Ceramics

Monday AM | September 29, 2025
B230 | Convention Center

Session Chairs: Yiquan Wu, Alfred University; Matthew Dejneka, Corning

8:00 AM
Low-Loss Ion-Exchange Waveguides in Glass: High Speed Optical Communications to the Chip: *Matthew Dejneka*[1]; Lars Brusberg[1]; David McEnroe[1]; Jorge Holguin-Lerma[1]; Chad Terwilliger[1]; Charisse Spier[1]; Jonathan Walter[1]; [1]Corning Research and Development

8:20 AM
Efficient Generation of High Harmonic Generation and Polarization-Dependent Nonlinearity in van der Waals Material: $AgScP_2S_6$: *Mohamed Yaseen Noor*[1]; Ryan Siebenaller[1]; Conrad Kuz[1]; Simin Zhang[1]; Adam Fisher[1]; Rahul Rao[2]; Emmanuel Rowe[2]; Bing Lv[3]; Benjamin Conner[2]; Michael Susner[2]; Enam Chowdhury[1]; [1]The Ohio State University; [2]Airforce Research Laboratory; [3]University of Texas at Dallas

8:40 AM
Evaluation of Line and Point Defects Using Optical Methods in ZnSe Crystal: *Jakob Peabody*[1]; Lauren Gower[1]; Leslie Scheurer[1]; Ching Hua Su[1]; Eric Bowman[1]; Bradley Arnold[1]; Florence Lucey[1]; Fow-Sen Choa[1]; Brian Cullum[1]; Narsingh Singh[1]; [1]University of Maryland Baltimore County

9:00 AM
Distributed Static Magnetic Field Sensing via Acoustic Sensing Optical Fiber and Magnetostrictive Materials: *Zachary Dejneka*[1]; [1]Virginia Tech

9:20 AM
Negative Thermal Expansion Hosts for Anti-Thermal Quenching Phosphors: *Yuanbing Mao*[1]; [1]Illinois Institute of Technology

9:40 AM
Phonon Polaritons for Enhanced Mid-Infrared Sensing: *Thomas Folland*[1]; [1]The University of Iowa

10:00 AM Break

10:20 AM
Photochemically-Programmable Optically-Functional High-Precision 3-D Chalcogenide Surface Glass Structures: *Myungkoo Kang*[1]; [1]Alfred University

10:40 AM
Self-Powered Visible Light Detection Using Silver and Cesium Antimony Iodide Thin Films Synthesized by Rapid Iodization Techniques: *Varshika Puthan Veedu Sasidharan*[1]; Sadasivan Shaji[2]; David Avellaneda[3]; Manuel García Méndez[1]; Bindu Krishnan[2]; [1]Facultad de Ciencias Físico Matemáticas, Universidad Autónoma de Nuevo León, San Nicolás de los Garza; [2]Facultad de Ingeniería Meca´nica y Eléctrica, Universidad Autónoma de Nuevo León, San Nicolás de los Garza, Centro de Innovación, Investigación y Desarrollo en Ingeniería y Tecnología (CIIDIT)- Universidad Autónoma de Nuevo León, Parque de Investigación e Innovación Tecnológica (PIIT); [3]Facultad de Ingeniería Meca´nica y Eléctrica, Universidad Autónoma de Nuevo León, San Nicolás de los Garza

11:00 AM
Stabilizing Mn5+ in High Optical Basicity Glasses: A New Class of NIR-II Phosphors for Bioimaging: *Amir Ashjari*[1]; Jiao Li[1]; Danielle Perry[1]; Brian Topper[2]; Yiquan Wu[1]; Doris Möncke[1]; [1]Alfred University; [2]Clemson University

11:20 AM
Thermally Stable Near-Infrared-Emitting Phosphors: Hexi Zhang[1]; *Yuanbing Mao*[1]; [1]Illinois Institute of Technology

11:40 AM
Trap Engineering of Persistent Phosphors for Optical Data Storage: Thulitha Abeywickrama[1]; *Yuanbing Mao*[1]; [1]Illinois Institute of Technology

SPECIAL TOPICS

The Navrotsky Award for Experimental Thermodynamics of Solids — The Navrotsky Award for Experimental Thermodynamics of Solids

Monday AM | September 29, 2025
B142/143 | Convention Center

Session Chair: Jose Marcial, Pacific Northwest National Laboratory

8:00 AM Invited
Investigation of Complex Metal Hydrides for Hydrogen Storage Using Thermochemistry, Analytical Methods, and Theory: *Konrad Burkmann*[1]; [1]Arizona State University

MATERIALS-ENVIRONMENT INTERACTIONS

Thermodynamics of Materials in Extreme Environments — Thermodynamics of Materials in Extreme Environments

Sponsored by: ACerS Basic Science Division, ACerS Energy Materials and Systems Division

Program Organizers: Xiaofeng Guo, Washington State University; Kyle Brinkman, Clemson University; Alexandra Navrotsky, Arizona State University; Kristina Lilova, Arizona State University; Jake Amoroso, Savannah River National Laboratory; Xingbo Liu, West Virginia University; Gustavo Costa, NASA Glenn Research Center

Monday AM | September 29, 2025
D181 | Convention Center

Session Chair: Xiaofeng Guo, Washington State University

8:00 AM Invited
Inferring Structure from Raman Spectroscopy and Connecting It to the Macroscopic Behavior of Molten ThCl4: *Vyacheslav Bryantsev*[1]; Luke Gibson[1]; Rajni Chahal[1]; [1]ORNL

8:20 AM Invited
Computational Tools for High Temperature Materials Properties: *Qijun Hong*[1]; [1]Arizona State University

8:40 AM Invited
Achieving Accurate Entropy and Melting Point by Ab Initio Molecular Dynamics and Zentropy theory: Application to Fluoride and Chloride Salts: *Shun-Li Shang*[1]; Xiaofeng Guo[2]; Qijun Hong[3]; Zi-Kui Liu[1]; [1]Pennsylvania State University; [2]Washington State University; [3]Arizona State University

9:00 AM
First-Principles Thermodynamic Assessments of Sr-Containing Secondary Phase Formation in $La_{1-x}Sr_xMnO_{3\pm}$ Perovskites for Solid Oxide Cell Applications: *Yueh-Lin Lee*[1]; Yuhua Duan[1]; Dan Sorescu[1]; Wissam Saidi[1]; Dane Morgan[2]; William Epting[1]; Harry Abernathy[1]; [1]National Energy Technology Laboratory; [2]University of Wisconsin-Madison

9:20 AM
Multiscale Prediction of α-Precipitate Nucleation in β-Stabilized Alloys: CALPHAD-based Model: *Astrid Rodriguez Negron*[1]; Aaron Tallman[1]; Audrey Torres[1]; [1]Florida International University

9:40 AM Invited
Metal Di-Boride (MB2 | M = Ti, Zr, Nb, Hf, Ta) Properties Above 3000 C: Elizabeth Sobalvarro[1]; Fox Thorpe[2]; Jesus Rivera[1]; Harry Charalambous[1]; Gabrella King[1]; James Cahill[1]; Wyatt Du Frane[1]; Joshua Kuntz[1]; *Scott Mccormack*[2]; [1]Lawrence Livermore National Laboratory; [2]University of California, Davis

10:00 AM Break

10:20 AM Invited
Thermochemical Stability of Oxides in High-Temperature, High-Velocity Steam: *Elizabeth Opila*[1]; [1]University of Virginia

10:40 AM
Nanoparticle-Reinforced Polymers for Blast Mitigation Technologies: *Jack Gugino*[1]; Morgan Gillis[1]; Mark Krekeler[1]; Mithun Bhowmick[1]; [1]Miami University

11:00 AM
Ultra-Lightweight Single-Phase Al-Based Complex Concentrated Alloy With High Specific Strength: *Qiaoshi Zeng*[1]; [1]Hpstar

11:20 AM
Thermodynamic Stability of Hydrated Rare Earth Carbonates (Lanthanites): *Alexandra Navrotsky*[1]; [1]Arizona State University

SPECIAL TOPICS

Plenary Sessions — TMS Plenary Session

Monday PM | September 29, 2025
Short North Ballroom | Convention Center

2:00 PM Introductory Comments

2:05 PM Plenary
TMS Plenary: Making Materials Science Go Viral!: *Taylor Sparks*[1]; [1]University of Utah

2:55 PM Concluding Comments

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

17th Symposium on Green and Sustainable Technologies for Materials Manufacturing and Processing — Green and Sustainable Technologies for Manufacturing Materials II

Sponsored by: ACerS Engineering Ceramics Division

Program Organizers: Surojit Gupta, University of North Dakota; Mrityunjay Singh, NASA; Tatsuki Ohji, National Institute of Advanced Industrial Science and Technology; Hisayuki Suematsu, Nagaoka University of Technololgy; Enrico Bernardo, University of Padova; Rajiv Asthana, University of Wisconsin; Yiquan Wu, Alfred University; Wei Ji, Wuhan University of Technology

Monday PM | September 29, 2025
B242/243 | Convention Center

Session Chairs: Lan Li, Pacific Northwest National Laboratory; Surojit Gupta, University of North Dakota; Junichi Tatami, Yokohama National University

2:00 PM Invited
Toward Scalable and Practical Quantum Devices: A Molecular Approach: *Lan Li*[1]; [1]Boise State University

2:30 PM Invited
Graphene Coating by Mechanical Treatment to Provide Water Resistance to Aluminium Nitride Particles Used in Spray-Freeze Granulation Drying of Aqueous Slurries: *Junichi Tatami*[1]; Riko Yamazaki[1]; Motoyuki Iijima[1]; Naoki Kondo[2]; Shinya Kawaguchi[3]; [1]Yokohama National University; [2]National Institute of Advanced Industrial Science and Technology; [3]Preci Co., Ltd.

3:00 PM
Recycled PET–Coir Fiber Composites: Advancing Circular Economy Through Sustainable Material Innovation: *Enis Agyeman Boateng*[1]; Danielle Cote[1]; Robert Krueger[1]; [1]Worcester Polytechnic Institute

3:20 PM Break

3:40 PM Invited
Two-Step Sintering for Improved Microstructure and Mechanical Properties: *Yanhao Dong*[1]; [1]Tsinghua University

4:10 PM
Eco-Friendly Paperclay Research Questions: *Rosette Gault*[1]; [1]New Century Arts, Inc (paperclaylab)

4:30 PM
Evaluation of the Mechanical, Thermal and Microstructural Behaviour of Gum Arabic Reinforced Polylactide Fibre: Victoria Obasa[1]; Olanrewaju Oludolapo[2]; Isaiah Owoyemi[3]; *Samson Adeosun*[3]; [1]Lagos State University; [2]Durban University of Technology ; [3]University of Lagos

SPECIAL TOPICS

ACerS Richard M. Fulrath Award Session — ACerS Richard M. Fulrath Award Session

Monday PM | September 29, 2025
B131 | Convention Center

2:20 PM Invited
Ferroic Complex Oxide Thin Films: From Fundamental Understanding to Next-Generation Devices: *Lane Martin*[1]; [1]Rice University

3:00 PM Invited
Development of Highly Heat-Dissipating and Filling Boron Nitride Particles and Improvement of Thermal Management Technology: *Shota Daiki*[1]; [1]Tokuyama Corporation

3:20 PM Break

3:40 PM Invited
Measuring Complex Permittivity: *Nathan Orloff*[1]; [1]National Institute of Standards and Technology

4:00 PM Invited
Ferrite/Metal Composite Materials for Magnetic Powder Cores With High Saturation Flux Density and Low Loss Properties: *Satoshi Mori*[1]; [1]Niterra Co., Ltd.

4:20 PM Invited
Polarization Behavior in BaTiO3-Based Dielectrics and Their Application to Secondary Batteries: *Takashi Teranishi*[1]; [1]Okayama University

ADDITIVE MANUFACTURING

Additive Manufacturing of Polymeric-Based Materials: Potentials and Challenges — Exploring the Additive Manufacturing Frontier of Polymeric Composites

Program Organizers: Matthew Caputo, Penn State Shenango; Ola Rashwan, Pennsylvania State University- Harrisburg; Daudi Waryoba, Pennsylvania State University; Jason Walker, The Ohio State University

Monday PM | September 29, 2025
C160A | Convention Center

Session Chairs: Matt Caputo, Penn State Beaver; Ola Rashwan, Penn State Harrisburg

2:00 PM
Continuous Carbon Fiber-Reinforced Composites for Aerospace Applications Using Advanced Manufacturing Techniques: *Kevin Tennant*[1]; Austin Harper[1]; Noah Osborne[1]; Konstantinos Sierros[1]; Thorsten Wuest[2]; Edward Sabolsky[1]; Wade Huebsch[1]; Chris Griffin[1]; [1]West Virginia University; [2]University of South Carolina

2:20 PM
Deposition of Antimicrobial Silver Nanoparticles (AgNPs) Hydrogel Coating for 3D-Printed Implants: *Caden Kurzenknabe*[1]; Ola Rashwan[1]; [1]Pennsylvania State University Harrisburg

2:40 PM
Effect of Environmental Conditions on Mechanical Properties of 3D-Printed Glass Microfiber Reinforced Polyamide (PA-12) Composites: *Jeet Thapa*[1]; Adedamola Adeyemi[1]; Toufik Kanit[1]; Ahsan Mian[1]; [1]Wright State University

3:00 PM
Extrusion of Antimicrobial PEEK/AgNPs 3D Printing Filament for Patient-Specific Implants: *Mohamed Abdalla*[1]; Caden Kurzenknabe[1]; Ola Rashwan[1]; [1]Pennsylvania State University- Harrisburg

3:20 PM Break

3:40 PM
New Permittivity-Based and Inductance-Based Functionalities for 3D-Printed Polymer-Based Materials: *Deborah Chung*[1]; [1]University at Buffalo, The State University of New York

4:00 PM
Rheological Study of Soybean Oil and Titanium Oxide Suspensions for Developing 4D Porous Materials: *Isaac Ntiamoah*[1]; Zahra Bahranifard[1]; Abby Whittington[1]; Carolina Tallon[1]; [1]Virginia Polytechnic Institute and State University

ADDITIVE MANUFACTURING

Additive Manufacturing of Thick Films Using Dry Aerosol Processes: Process Development, Materials, Process Optimization and Applications — Solid Particle Aerosol Deposition

Sponsored by: TMS: Additive Manufacturing Committee

Program Organizers: Desi Kovar, University of Texas at Austin; Shannon Murray, Sandia National Laboratories; Michael Gammage, CCDC Army Research Laboratory

Monday PM | September 29, 2025
C150 | Convention Center

Session Chair: Desiderio Kovar, University of Texas at Austin

3:00 PM
Development of Variable Composition Aerosol Deposition Coatings: *Shannon Murray*[1]; Jacob Williamson[1]; Seth Davis[1]; Stephen Bierschenk[2]; Desiderio Kovar[2]; [1]Sandia National Laboratories; [2]University of Texas at Austin

3:20 PM
Helium-Free High-Performance Cold Spray: *David Brennan*[1]; Kyle Johnson[1]; Aaron Nardi[1]; [1]VRC Metal Systems

3:40 PM Break

4:00 PM
Surface Protection of Low Carbon Steel with Dense Aluminosilicate Coatings by Dry Aerosol Deposition: *Arezou Karimian*[1]; Paul Fuierer[2]; [1]New Mexico Tech Institute of Mining and Technology; [2]New Mexico Institute of Mining and Technology

4:20 PM
Quasi Tempering of Glass via Dry Aerosol Deposition: *Paul Fuierer*[1]; Robert Borrego[1]; [1]New Mexico Institute of Mining and Technology

4:40 PM
A Deep Learning-Based Molecular Dynamics Study of the Effect of an Oxide Layer on the Deposition of Tantalum Particles: Stephen Bierschenk[1]; Michael Becker[1]; *Desiderio Kovar*[1]; [1]University of Texas at Austin

5:00 PM
Micro-Cold Spray of Zinc Oxide Nanoparticle Aggregates with Different Fractal Dimensions: *Scott Burlison*[1]; Michael Becker[1]; Desiderio Kovar[1]; [1]University of Texas at Austin

5:20 PM
Room-Temperature Fabrication of Functional Ceramic Films: *Neamul Hayet Khansur*[1]; Shan He[1]; [1]Case Western Reserve University

ADDITIVE MANUFACTURING

Additive Manufacturing, Directed Energy Deposition of Metals: Processing – Microstructure – Mechanical Property Relationships — Nickel Alloys

Sponsored by: TMS: Additive Manufacturing Committee

Program Organizers: Jonah Klemm-Toole, Colorado School of Mines; Joy Gockel, Colorado School of Mines

Monday PM | September 29, 2025
C160B | Convention Center

Session Chair: Benjamin Adam, Oregon State University

3:00 PM
The Next Step: Tailored Ni and Co Based Superalloy Development via High-Throughput Additive Manufacturing: *Ajay Talbot*[1]; Yu Zou[1]; [1]University of Toronto

3:20 PM Break

3:40 PM Invited
Process-Microstructure-Property Relationships in Low Heat Input Wire-Arc Additive Manufacturing (WAAM) of Ni-Based Superalloy Haynes 282: *Benjamin Adam*[1]; Rui Feng[2]; Robert Turpin[1]; Shane Namie[2]; Dustin Crandall[2]; Graham Tewksbury[1]; Chantal Sudbrack[2]; [1]Oregon State University; [2]National Energy Technology Laboratory

4:20 PM
Influence of Compositional and Microstructural Complexity on Ion Irradiation Resistance in Additively Manufactured CoCrFeNi-Based High-Entropy Alloys: Jiaxuan Li[1]; Som Dixit[1]; Yongqiang Wang[2]; *Shunyu Liu*[1]; [1]Clemson University; [2]Los Alamos National Laboratory

4:40 PM
Shaped Laser Texture Modulation in the Directed Energy Deposition of a Nickel Superalloy: *Jack Dale*[1]; Annabel Shim[2]; James Zuback[3]; Carelyn Campbell[3]; Samantha Webster[1]; [1]Colorado School of Mines; [2]Ohio State University; [3]NIST

5:00 PM
Application of Direct Energy Deposition Additive Manufacturing for Forging Die Repair: *Akash Belure*[1]; Mayank Garg[1]; David Schwam[1]; Tushar Borkar[1]; [1]Cleveland State University

ADDITIVE MANUFACTURING

Additive Manufacturing: Design, Materials, Manufacturing, Challenges and Applications — Additive Manufacturing: Design, Materials, Manufacturing, Challenges and Applications - Session I

Sponsored by: ACerS Other

Program Organizers: Navin Manjooran, Solve; Gary Pickrell, Virginia Tech

Monday PM | September 29, 2025
C151 | Convention Center

Session Chairs: Gary Pickrell, Virginia Tech; Navin Manjooran, Solve

2:00 PM Introductory Comments

2:30 PM
Effect of Recrystallization on the Fatigue Properties of SS316L–Inconel 718 Bimetallic Medium-High Entropy Alloy Fabricated by Laser Powder Bed Fusion: *Liyi Wang*[1]; Xuanzhuo Nie[1]; Mustafa Kaş[2]; Wei Xiong[1]; [1]University of Pittsburgh; [2]Gazi University

2:50 PM
Influence of Feedstock and Heat Treatment on Cold Spray Additive Manufacturing of Al 7075: *Dylan Treaster*[1]; Michael Schmitt[1]; [1]HAMR Industries LLC

3:10 PM
Latest Developments in HIP and High-Pressure Heat Treatment for Additive Manufacturing: *Chad Beamer*[1]; Andrew Cassese[1]; [1]Quintus Technologies Llc

3:30 PM Break

3:50 PM
Mechanical Behavior of CuSnNi Components Manufactured by Laser Powder Bed Fusion: *Sanid Dahal*[1]; John Martin[1]; Sai Teja Bokka[1]; Constantin Solomon[1]; [1]Youngstown State University

4:10 PM
Mechanical Strength of Interfacial Bonds of Multi Material FGMs Using Laser Powder Bed Fusion: *Gabriel Awuku*[1]; Sara Ranjbareslamloo[1]; Md. Muhiul Muhit[1]; Ala Qattawi[1]; [1]University of Toledo

4:30 PM
Microstructural Evolution and Mechanical Response of LPBF-Fabricated IN718/SS316L Functionally Graded Materials: *Sara Ranjbareslamloo*[1]; Gabriel Awuku[1]; Md. Muhiul Muhit[1]; Ala Qattawi[1]; [1]University of Toledo

4:50 PM
Unveiling Creep-Induced Microstructural Changes in 3D-Printed ODS Alloys via Advanced SEM-Based Characterization.: *Subham Chattoraj*[1]; Johan Westraadt[1]; Andreas Bezold[1]; Timothy Smith[2]; Michael Mills[1]; [1]The Ohio State University; [2]NASA Glenn Research Center

5:10 PM
Advancement in Alloys Performance Through Additive Manufacturing with Breakthrough Properties Improvement Without Modifying Alloys Chemistry: *Youping Gao*[1]; [1]Castheon Inc

NUCLEAR ENERGY

Advanced Characterization of Materials for Nuclear, Radiation, and Extreme Environments VI — Advanced Characterization Session II

Sponsored by: TMS: Nuclear Materials Committee

Program Organizers: Cheng Sun, Clemson University; Caitlin Kohnert, Los Alamos National Laboratory; Samuel Briggs, Oregon State University; Michael Short, Massachusetts Institute of Technology; Khalid Hattar, University of Tennessee Knoxville

Monday PM | September 29, 2025
D280 | Convention Center

Session Chair: To Be Announced

3:00 PM
Bridging Distributed Autonomous Platforms for Materials Innovation: *Yongtao Liu*[1]; Sumner Harris[1]; [1]Oak Ridge National Laboratory

3:30 PM Break

3:50 PM
Corrosion of Ni-Based Alloys in Light Water Reactor Environment: An In-situ Bragg Coherent Diffraction Imaging Approach: *Sayantan Mondal*[1]; David Simonne[1]; Riley Hultquist[1]; Ericmoore Jossou[1]; [1]MIT

4:10 PM
Development, Validation, and Uncertainty Quantification of a BISON Model for Pd Penetration in TRISO Particle Fuels: *Chaitanya Bhave*[1]; Jacob Hirschhorn[1]; Som Dhulipala[1]; Mathew Swisher[1]; Ryan Sweet[1]; [1]Idaho National Laboratory

4:30 PM
A Time Dependent Multiaxial Inelastic Constitutive Model for Nuclear Graphite: *Mirza Baig*[1]; Stephen Duffy[1]; Joisah Owusu-Danquah[1]; [1]Cleveland State University

4:50 PM
Gamma Ray Shielding Performance of 3D Printed Polymers: *Lucas Clark*[1]; Fahima Ouchen[2]; Laura Davidson[2]; Emily Heckman[3]; Carrie Bartsch[3]; Ahsan Mian[1]; [1]Wright State University; [2]KBR; [3]Air Force Research Laboratory

MATERIALS-ENVIRONMENT INTERACTIONS

Advanced Coatings for Wear and Corrosion Protection — Advanced Coatings for Wear and Corrosion Protection

Program Organizers: Evelina Vogli, Flame Spray Inc.; Virendra Singh, SLB

Monday PM | September 29, 2025
D181 | Convention Center

Session Chairs: Evelina Vogli, Flame Spray Inc.; Virendra Singh, Schlumberger

2:00 PM
Cold-Sprayed and Arc-Melted High-Entropy Alloys: Wear, Erosion and Oxidation: *Yu Zou*[1]; [1]University of Toronto

2:20 PM
Understanding the Role of Particle Size on Thin Coating Formation and Mechanical Properties of WC-Co-Cr Coatings Deposited by HVAF Spray: *Vijaya Lakshmi Devara*[1]; Sivakumar Govindarajan[1]; Prasad M.J.N.V.[2]; Suresh Babu Pitchuka[1]; [1]ARCI-HYDERABAD; [2]Indian Institute of Technology, Bombay

2:40 PM
NbC Reinforced Ni Based Alloy Cladding by Thermal Spray Coatings and Weld Overlay Technique: *Leo V. M. Antony*[1]; David Rigg[1]; Damon Fields[1]; Dustin Reitmeyer[1]; Leo Baird[1]; [1]SCM Metal Products

3:00 PM
Laser Cladding of CoCrCuFeNi and CoCrFeNi High-Entropy Alloys on DMR 249A Steel: Corrosion and Wear Behavior: *Sudeep Kumar Thippeswamy*[1]; Prashantha Sanikere[1]; [1]Siddaganga Institute of Technology

3:20 PM Break

3:40 PM
Open-Air Plasma Assisted Organosilicon Coating on Automotive Aluminum Alloys for Corrosion Protection: *Jiheon Jun*[1]; Yong Chae Lim[1]; Tianzhao Wang[1]; Yi-Feng Su[1]; Ryan Robinson[2]; Daphne Pappas[2]; [1]Oak Ridge National Laboratory; [2]Plasmatreat USA

4:00 PM
Tailored DLC Coating for Regolith Dust Mitigation: *Tyler Roy*[1]; Sharon Gray[1]; Jacqueline Johnson[1]; Lee Leonard[1]; William Scott[2]; Matthew Mazurkivich[2]; [1]University of Tennessee Space Institute; [2]NASA Marshall Space Flight Center

4:20 PM
Tribocorrosion Performance of TiAlN and AlTiN Coatings on Ti6Al4V Alloy for Biomedical Applications: *Thiago Gontarski*[1]; Bruno Pereira[1]; Ricardo Torres[1]; Paulo Soares[1]; [1]Pontifical Catholic University of Paraná

4:40 PM
Anti-Erosion Coatings of Silicon Carbide and Tantalum Carbonitride Nanocomposite by Chemical Vapor Deposition: *Hirokazu Katsui*[1]; Kazuya Shimoda[2]; Katsuyoshi Harada[3]; Jun Kumagai[3]; Mikinori Hotta[1]; [1]National Institute of Advanced Industrial Science and Technology (AIST); [2]National Institute for Materials Science (NIMS); [3]Nagoya University

5:00 PM
Oxide Thin Films Obtained by Reactive Sputtering for Antifouling Purposes: *Gabriel Abelha Carrijo Gonçalves*[1]; Bruno Leonardo Ribeiro Oliveira[2]; Denise Tornavoi de Castro[2]; Marcelo Rodrigues Pinto[2]; Rogério Valentim Gelamo[3]; Jeferson Aparecido Moreto[3]; Idalina Vieira Aoki[1]; [1]University of São Paulo; [2]University of Uberaba; [3]Federal University of Triângulo Mineiro

5:20 PM
Effects of Cu, Sn, and Mn Additions on Intermetallic Layer Growth in Hot-Dip Aluminizing with Al-9Si Bath: *Jihun Choi*[1]; Eui-Jin Jung[1]; Dae-Yoon Kim[1]; Joo-Youl Huh[1]; [1]Korea University

5:40 PM
Evolution of Mechanical Properties of PEO Coated Mg Rods: *Eric Noe Hernandez Rodriguez*[1]; C. Peñuela-Cruz[1]; A Márquez-Herrera[1]; [1]University of Guanajuato

CERAMIC AND GLASS MATERIALS

Advances in Dielectric Materials and Electronic Devices — Ferroelectrics

Sponsored by: ACerS Electronics Division

Program Organizers: Amar Bhalla, University of Texas; Ruyan Guo, University of Texas at San Antonio; Rick Ubic, Boise State University; Matjaž Spreitzer, Jožef Stefan Institute; Tanmoy Maiti, IIT Kanpur

Monday PM | September 29, 2025
B142/143 | Convention Center

Session Chairs: Amar Bhalla, University of Texas at San Antonio; Ruyan Guo, University of Texas at San Antonio

2:00 PM Invited
Machine Learning-Assisted Identification of Crystal Symmetries in Ferroelectric Perovskites Using X-Ray Diffraction Patterns: *Luiz Cotica*[1]; Hugo Machado[1]; Gustavo Dias[1]; Ivair Santos[1]; Ruyan Guo[1]; Amar Bhalla[2]; [1]State University of Maringa; [2]University of Texas at San Antonio

2:20 PM
Anomalous Dielectric Behavior and Domain Reorientation/ Switching in the (Bi0.5Na0.5)0.92Ba0.08TiO3 Ceramic System Below a Critical Temperature: Aimé Peláiz-Barranco[1]; Yon Leandro Leyvas-López[1]; Alejandro Carlos Iglesias-Jaime[1]; Mohammad Bakhtbidar[2]; Andreas Ruediger[2]; Tongqing Yang[3]; Marcos Aparecido dos Santos Mariano[4]; Tawan H. T. Rosa[4]; *Jose de los Santos Guerra*[4]; [1]Universidad de La Habana; [2]Institut National De La Recherche Scientifique; [3]Tongji University; [4]Universidade Federal de Uberlandia

2:40 PM
Enhancement of Spontaneous Ferroelectric Polarization in Sm-Doped BaFe0.2Ti0.8O3 Ceramics: *Anumeet Kaur*[1]; [1]Global Group of Institutes

3:00 PM
Influence of Monoclinic Phase on Energy Harvesting Performance and Contribution of Tetragonal Phase to Uncertainty in Pb(Mg,Nb)O3 PbTiO3 Ceramics: *Yang Bai*[1]; [1]University of Oulu

3:20 PM Break

3:40 PM Invited
Unlocking High Capacitive Energy-Density in Sm-Doped PMN-PT Thin Films: *Matjaž Spreitzer*[1]; Zouhair Hanani[1]; Urška Trstenjak[1]; Jamal Belhadi[1]; Anna Razumnaya[1]; Igor Lukyanchuk[1]; Zdravko Kutnjak[1]; [1]Jožef Stefan Institute

4:00 PM
Investigation of the Dielectric Relaxation Processes in Donor-Doped $BaTiO_3$-Based Ceramics: *Tawan H. T. Rosa*[1]; Marco Aurélio de Oliveira[2]; Yanela Mendez González[3]; Fidel Guerrero Zayas[4]; Ruyan Guo[5]; Amar Bhalla[5]; José de los Santos Guerra[1]; [1]Universidade Federal de Uberlândia; [2]Universidade Federal do Vale do Jequitinhonha e Mucuri; [3]Universidad Politécnica de Madrid; [4]Universidade Federal do Amazonas; [5]The University of Texas at San Antonio

4:20 PM
Investigation of the Structural Properties and Dielectric Relaxation Processes in NBT–KBT Based Lead-Free Ceramics: *Marcos Aparecido dos Santos Mariano*[1]; José Eduardo Garcia[2]; Ruyan Guo[3]; Amar Bhalla[3]; José de los Santos Guerra[1]; [1]Instituto de Física, Universidade Federal de Uberlandia; [2]Universitat Politécnica de Catalunya - BarcelonaTech; [3]The University of Texas at San Antonio

4:40 PM Invited
Ferroelectrics of Sustainable Nanostructured Films Derived by Bacterial Cellulose: *Hathaikarn Manuspiya*[1]; Bhumin Than-ardna[1]; Siwat Penrasamee[1]; [1]Chulalongkorn University

IRON AND STEEL (FERROUS ALLOYS)

Advances in Ferrous Process Metallurgy — Processing & Characterization

Sponsored by: AIST Metallurgy—Processing, Products and Applications Technology Committee

Program Organizers: Yashwanth Injeti, Big River Steel; Viraj Ashok Athavale, Nucor Steel Memphis Inc; Judy Qiujin Li, ClevelandCliffs

Monday PM | September 29, 2025
D281 | Convention Center

Session Chairs: Olujide Oyerinde, Clarkson University; Yashwanth Injeti, Big River Steel

2:00 PM
Cerium's Effect on the Softening Kinetics of Low Carbon Steels and the Intricacies of Deformed States: *Chetan Kadgaye*[1]; [1]IIT Roorkee

2:20 PM
Analysis of the Behavior Change of STS Transforming to Austenite After Delta Solidification Based on In-Situ Images: *Dae-Geun Hong*[1]; [1]Pohang University of Science and Technology

2:40 PM
Direct Powder Forging of Mechanically Alloyed Ferritic Steels: Oxide Dispersion Effects on Microstructure and Tensile Performance: *Himanshu Pal*[1]; Vikram Dabhade[1]; [1]Indian Institute of Technology Roorkee

3:00 PM
Effect of Al or Ti Addition on the Austenite Grain Size and Ferrite Formation in Ultra-Low Oxygen Weld Metal of Low-Carbon Steel: *Takashi Mizuguchi*[1]; Masatoshi Sukemiya[1]; Takumi Yoneji[1]; Daichi Miyata[1]; [1]Ehime University

3:20 PM Break

3:40 PM
Effect of Residual Elements on the Microstructure and Properties of High Strength DP Steel for Automotive Application: *Hyuntaek Na*[1]; Hwangoo Seong[1]; Jaehoon Lee[1]; Jaejoong Kim[1]; Dongwan Kim[1]; Young-Roc Im[1]; [1]POSCO

4:00 PM
Effects of Nb and Si Addition on the Microstructure and Mechanical Properties in Friction Welded Joint of Non-Quenched and Tempered Steels: *Bongjun Kim*[1]; Joonoh Moon[1]; Jun-Yun Kang[2]; Jungwon Lee[3]; Yonghyun Kim[3]; [1]Changwon National University; [2]Korea Institute of Materials Science; [3]DY Power

4:20 PM
Microstructure and Mechanical Properties of High Nitrogen Austenitic Stainless Steels Manufactured by PM-HIP Process and the Effects of Nb Addition: *Byeongchan Lee*[1]; Joonoh Moon[1]; Hyun-Uk Hong[1]; Dongsoo Kim[2]; Sehwan An[2]; [1]Changwon National University; [2]Doosan Enerbility

4:40 PM
Nanotomographic Characterization of Iron Pellets: *Samuel Pennell*[1]; Vivek Kashyap[1]; Robert Bell[1]; Kerry Rippy[1]; [1]NREL

5:00 PM
Transient Development of Molten Slag-Metal Systems: *Brian Hicks*[1]; Vanshika Singh[1]; Yiyu Wang[1]; Rangasayee Kannan[1]; Brett Spigarelli[2]; Julio Ortega Rojas[1]; Dustin Gilmer[3]; Bradley Jared[3]; Sudarsanam Babu[4]; Tony Schmitz[3]; Alan Frederick[1]; Sarah Graham[1]; David Hebble[5]; Adam Stevens[1]; [1]Oak Ridge National Laboratory; [2]University of Minnesota; [3]University of Tennessee; [4]University of Maryland; [5]Arc Specialties, Inc.

5:20 PM
Using Laser Heat Treatment to Influence Fatigue Crack Initiation Location: *Jenna Stanton*[1]; [1]Ohio University

5:40 PM
Innovative Technology for the Restoration of Metal Steel Parts: *Borys Sereda*[1]; Irina Kruglyak[1]; Yuriy Petrusha[2]; Dmytro Sereda[2]; [1]DSTU; [2]NU Zaporizhzhia Polytechnic

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Advances in Materials and Systems for a Hydrogen Economy — Complex Interactions of Materials, Components, and Systems for Hydrogen Production, Separation, Storage, Transport, and Utilization

Sponsored by: ACerS Manufacturing Division, ACerS Refractory Ceramics Division

Program Organizers: Manoj Mahapatra, University of Alabama-Birmingham; James Hemrick, Oak Ridge National Laboratory; John Hardy, Pacific Northwest National Laboratory; Jorgen Rufner, Idaho National Laboratory

Monday PM | September 29, 2025
B246 | Convention Center

Session Chairs: Xueyan Song, West Virginia University; Amrita Bag, EVRAZ North America ; Julian Long, FAMU-FSU College of Engineering- Florida State University; Martin Detrois, National Energy Technology Laboratory

2:00 PM Invited
Materials Development for Protonic Ceramic Electrolysis Cells: *Sandrine Ricote*[1]; Yewon Shin[1]; Robert Kee[1]; [1]Colorado School of Mines

2:30 PM Invited
Performance and Durability of Solid Oxide Fuel Cells Operated on Cleaned Coal-Derived Syngas: *Jivan Thakare*[1]; [1]University of North Dakota

3:00 PM Invited
La0.6Sr0.4Co0.2Fe0.8O3 Degradation Under SOEC Conditions and Its Effects on Operational Lifetimes: *Brian Gorman*[1]; Heather Slomski[2]; Madeline Van Winkle[3]; Nicholas Strange[4]; Liam Nagle-Cocco[4]; Andrew Rowberg[5]; Jonas Kaufman[5]; Michael Dzara[3]; David Ginley[3]; Sarah Shulda[3]; [1]Colorado School of Mines; [2]Colorado School of Mines and National Renewable Energy Laboratory; [3]National Renewable Energy Laboratory; [4]SLAC National Accelerator Laboratory; [5]Lawrence Livermore National Laboratory

3:30 PM Break

3:50 PM
Quantification of 4 Phase Microstructural Changes in Solid Oxide Cells Fuel Electrodes After Electrolysis and Reversible Operations: *Emily Ghosh*[1]; John-In Lee[1]; Srikanth Gopalan[1]; Uday Pal[1]; Soumendra Basu[1]; [1]Boston University

4:10 PM Invited
Debunking Generalizations Regarding Interactions of Hydrogen with Fe- and Ni-Based Alloys at Temperatures > 400°C: *Rishi Pillai*[1]; Marie Romedenne[1]; Dean Pierce[1]; J.A. Haynes[1]; [1]Oak Ridge National Laboratory

4:40 PM
Effect of Compressive Residual Stress on Hydrogen Permeability in Shot-Peened Steel Under Cathodic Charging: *Jia-Huei Tien*[1]; Ana Armendariz[1]; David Johnson[1]; David Bahr[1]; [1]Purdue University

IRON AND STEEL (FERROUS ALLOYS)

Advances in Metallic Coated Advanced Steels — Advances in Metallic Coated Advanced Steels

Sponsored by: AIST Metallurgy—Processing, Products and Applications Technology Committee

Program Organizers: Ana Paula Domingos Cardoso, International Zinc Association; Daniel Baker, LIFT

Monday PM | September 29, 2025
D283 | Convention Center

Session Chairs: Ana Paula Domingos Cardoso, International Zinc Association; Daniel Baker, LIFT

2:00 PM
Correlation Between Surface Topography and Radiometric Properties During Galvannealing: *Michiyo Kagaya*[1]; Fatima Suleiman[1]; Ana Cardoso[2]; Kyle Daun[1]; [1]University of Waterloo; [2]International Zinc Association

2:30 PM
Grain-Boundary Precipitation as a Mechanism of Liquid-Metal Embrittlement in Advanced High-Strength Steels: Seungchang Han[1]; Yuki Ikeda[1]; Theophilius Wallis[1]; Reza Darvishi Kamachali[1]; *Robert Maass*[1]; [1]Federal Institute of Materials Research and Testing (BAM)

3:00 PM
Production of Zinc Coating on Sheet Steel Using FA Charges Containing Nickel Additives: *Borys Sereda*[1]; Irina Kruglyak[1]; Dmytro Sereda[1]; [1]DSTU

3:30 PM Break

3:50 PM
Surface-Modified High-Mn Steel via HSLA Multilayer Additive Manufacturing: Robust LMAC Resistance: *Du-Rim Eo*[1]; Seok-Hyun Hong[2]; Jung-Wook Cho[3]; [1]Korea Institute of Industrial Technology; [2]POSCO; [3]Pohang University of Science and Technology

4:20 PM
Zinc Coating Control Using the New ICP-Zn Integral Indicator: Borys Sereda[1]; *Kruglyak Irina*[1]; Dmytro Sereda[1]; Konstantin Skrebkov[1]; [1]DSTU

PROCESSING AND MANUFACTURING

Advances in Refractory High Entropy Alloys and Ceramics — High-Temperature Mechanical Properties

Sponsored by: TMS: Refractory Metals & Materials Committee, ACerS Basic Science Division

Program Organizers: Mingwei Zhang, University of California, Davis; Arezoo Zare, Washington State University; John Perepezko, University of Wisconsin-Madison; Bai Cui, University of Nebraska Lincoln

Monday PM | September 29, 2025
B232 | Convention Center

Session Chair: Arezoo Zare, Washington State University

3:40 PM Invited
Creep Behavior of a Precipitation-Strengthened A2-B2 Refractory High Entropy Alloy: *Sandipan Sen*[1]; Liu Yang[1]; Daniel Schliephake[1]; Alexander Kauffmann[1]; Raja Vikram[1]; Stephan Laube[1]; Aparajita Pramanik[2]; Ankur Chauhan[2]; Martin Heilmaier[1]; [1]Karlsruhe Institute of Technology; [2]Indian Institute of Science Bengaluru

4:10 PM Invited
High-Temperature Mechanical Behavior of Refractory Alloys: *Gianna Valentino*[1]; [1]University of Maryland

4:40 PM
Tensile Creep Mechanisms of the Nb45Ta25Ti15Hf15 and NbTaTiV Refractory High-Entropy Alloys: *Mingwei Zhang*[1]; Michael Lau[1]; Tamanna Zakia[1]; Gianmarco Sahragard-Monfared[1]; Satish Rao[2]; Wenqing Wang[2]; Calvin Belcher[3]; Mark Asta[2]; Diran Apelian[3]; Enrique Lavernia[4]; [1]University of California, Davis; [2]University of California, Berkeley; [3]University of California, Irvine; [4]Texas A&M University

FUNDAMENTALS AND CHARACTERIZATION

Applications of Uncertainty Quantification (UQ) in Science and Engineering — UQ Applications in Materials and Engineering - Bayesian Calibration, Sparse Grid Surrogates, Meso-Scaling, Meta Analysis, Deep Kernel Learning

Sponsored by: ACerS Engineering Ceramics Division

Program Organizers: Mark Andrews, SmartUQ (retired); Miroslav Stoyanov, Oak Ridge National Laboratory

Monday PM | September 29, 2025
C162B | Convention Center

Session Chairs: Mark Andrews, Independent Consultant; Miroslav Stoyanov, Oak Ridge National Laboratory

2:00 PM Introductory Comments

2:05 PM
A Case Study of Bayesian Parameter Estimation for Thermal Property Inference and Uncertainty Quantification: *Jeremy Drew*[1]; Shravan Godse[1]; Yuxing Liang[1]; Abhishek Pathak[1]; Jonathan Malen[1]; Rachel Kurchin[1]; [1]Carnegie Mellon University

2:25 PM
Sparse Grids for Magneto-Hydrodynamics: *Miroslav Stoyanov*[1]; Hoang Tran[1]; [1]Oak Ridge National Laboratory

2:45 PM
Representative Microstructure for Macro-Scale Property Prediction Using Multi-Scale Models: *Arulmurugan Senthilnathan*[1]; Pranav Karve[1]; Sankaran Mahadevan[1]; [1]Vanderbilt University

3:05 PM
Leveraging Archival Additively Manufacturing Fatigue Data to Investigate the Role of Processing Porosity with Greater Precision: *Ian Wietecha-Reiman*[1]; Todd Palmer[1]; [1]Pennsylvania State University

3:25 PM Break

3:45 PM
Uncertainty Quantification via Deep Kernel Learning for Predicting Multimodal -Phase Volume Fraction from SXRD Patterns: *Ayorinde Olatunde*[1]; Ozan Dernek[1]; Gabriel Ponon[1]; Weiqi Yue[1]; Qingzhe Guo[1]; Amit Samantha[2]; Donald Brown[3]; Roger French[1]; Pawan Tripathi[1]; Anirban Mondal[1]; [1]Case Western Reserve University; [2]Lawrence Livermore National Laboratory; [3]Los Alamos National Laboratory

4:05 PM Concluding Comments

NUCLEAR ENERGY

Ceramic Materials for Nuclear Energy System — Materials and Processes for Nuclear Energy Systems

Sponsored by: ACerS Energy Materials and Systems Division, TMS: Nuclear Materials Committee

Program Organizers: Krista Carlson, University of Nevada, Reno; Lingfeng He, North Carolina State University; Charmayne Lonergan, Missouri University of Science and Technology; Jake Amoroso, Savannah River National Laboratory; Brian Riley, Pacific Northwest National Laboratory

Monday PM | September 29, 2025
D282 | Convention Center

Session Chairs: Jake Amoroso, Savannah River National Laboratory; Krista Carlson, University of Nevada, Reno; Charmayne Lonergan, Missouri University of Science and Technology

---

2:00 PM
Point Defect Energetics in AlGaN Alloys by Machine Learning Force Field: *Farshid Reza*[1]; Beihan Chen[1]; Miaomiao Jin[1]; [1]Pennsylvania State University

2:20 PM
The Role of Microstructures in Hydrogen Retention in Zirconium Hydride Moderator: *Yuwen Xu*[1]; Wenwen Leng[1]; Nicholas Dailey[1]; Jianqi Xi[1]; [1]University of Illinois Urbana-Champaign

2:40 PM
Cluster Dynamics Modeling of Extended Defect Evolution with Loop Unfaulting in Proton-Irradiated Single Crystal ThO2: *Md Minaruzzaman*[1]; Yongfeng Zhang[2]; Miaomiao Jin[3]; Mutaz Alshannaq[1]; Anshul Kamboj[4]; Kaustubh Bawane[4]; Boopathy Kombaiah[4]; Lingfeng He[5]; David Hurley[4]; Marat Khafizov[1]; [1]The Ohio State University; [2]University of Wisconsin-Madison; [3]Pennsylvania State University; [4]Idaho National Laboratory; [5]North Carolina State University

3:00 PM
Swift Heavy Ions to Study Amorphization Behavior of Compositionally Complex Oxides: *Kenneth Sanders*[1]; George Adamson[1]; Cale Overstreet[1]; Eric O'Quinn[1]; Tao Liang[1]; Haixuan Xu[1]; Pascal Simon[2]; Jesse Smith[3]; Joerg Neuefeind[4]; Joshua Safin[1]; Katharine Page[1]; David Sprouster[5]; Maik Lang[1]; [1]University of Tennessee, Knoxville; [2]GSI Helmholtzzentrum für Schwerionenforschung; [3]Argonne National Laboratory; [4]Oak Ridge National Laboratory; [5]Stony Brook University

3:20 PM
In Situ High-Temperature Behavior of Uranium Borides: Riley Moeykens[1]; Axel Tran[2]; Anthony Harrup[1]; Mehmet Topsakal[3]; Bruce Ravel[3]; *Ericmoore Jossou*[1]; [1]Massachusetts Institute of Technology; [2]École Polytechnique; [3]Brookhaven National Lab

3:40 PM Break

4:00 PM
Stabilization of Research Reactor Spent Nuclear Fuel to Ceramic Form for Potential Disposal in a Deep Geological Repository: *Anil Prasad*[1]; Aaron Barry[1]; Ernesto Geiger[1]; James Crigger[1]; Madalena Spencer[1]; Ray Dickson[1]; [1]Canadian Nuclear Laboratories

4:20 PM
Analysis of Crucible-Scale Corrosion Testing of Monofrax® K-3 Refractory in Contact with Glass Melts: *Matthew Page*[1]; Jake Amoroso[1]; Nicodemus Rod[1]; Daniel Odell[1]; [1]Savannah River National Laboratory

4:40 PM
Synthesis and Characterization of Rhenium Chalcogenides for Nuclear Waste Management: *Logan Breton*[1]; Jake Amoroso[1]; [1]Battelle Savannah River Alliance/Savannah River National Laboratory

5:00 PM
Chemical Durability of Cermet Waste Forms for Advanced Reactor Wastes: *Jake Amoroso*[1]; Matthew Page[1]; Nathaniel Marrero[2]; Shanmugavelayutham. K. Sundaram[2]; Alevtina Maksimova[3]; Gregory Morrison[3]; Hans-Conrad zur Loye[3]; [1]Savannah River National Laboratory; [2]Alfred University; [3]University of South Carolina

5:20 PM
Dechlorination and Immobilization of Electrorefiner Salt Waste in Phosphate Glass Matrices: *Lucas Greiner*[1]; Charmayne Lonergan[1]; [1]Missouri University of Science and Technology

NANOMATERIALS

Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials — 2D Nanomaterials

Sponsored by: ACerS Basic Science Division, ACerS Electronics Division, ACerS Energy Materials and Systems Division, ACerS Engineering Ceramics Division

Program Organizers: Haitao Zhang, University of North Carolina at Charlotte; Gurpreet Singh, Kansas State University; Kathy Lu, University of Alabama Birmingham; Edward Gorzkowski, Naval Research Laboratory; Michael Naguib, Tulane University; Sanjay Mathur, University of Cologne; Wonmo Kang, Arizona State University; Babak Anasori, Purdue University; Oliver Diwald, Paris Lodron Universitaet Salzburg; Hyunjoo Choi, Kookmin University

Monday PM | September 29, 2025
B230 | Convention Center

Session Chairs: Babak Anasori , Purdue University; Michael Naguib, Tulane University; Gurpreet Singh, Kansas State University

2:00 PM Invited
Structure–Property Relationships in Ti and Mo-Based MXenes for Advanced Biosensing: *Lia Stanciu*[1]; Ya-Ching Yu[1]; [1]Purdue University

2:30 PM Invited
The Role of Surface Terminations in MXene Optical and Electronic Properties: *Zahra Fakhraai*[1]; Hui Fang[1]; Zhenyao Fang[1]; Anupma Thakur[2]; Vahid Rad[3]; Pawe Michałowski[4]; Masoud Soroush[3]; Babak Anasori[2]; Andrew Rappe[1]; [1]University of Pennsylvania; [2]Purdue University; [3]Drexel University; [4]Łukasiewicz Research Network

3:00 PM
Design of Nanolayered Carbides Through Assembly & Fusion of 2D Building Blocks: *Brian Wyatt*[1]; Kat Nykiel[1]; Pawe Michaowski[2]; Alejandro Strachan[1]; Babak Anasori[1]; [1]Purdue University; [2]Łukasiewicz Research Network

3:20 PM Break

3:40 PM Invited
Engineered Laser-Induced Nanomaterials for Long-Term Stable, Skin-Conformal, and Non-Invasive Biosensing Applications: *Farnaz Lorestani*[1]; [1]Penn State University

4:10 PM
Defect Engineering and Phase Stability of MXenes for High Temperatures: *Caleb Wasserbeck*[1]; Brian Wyatt[1]; Babak Anasori[1]; [1]Purdue University

4:30 PM
High Throughput Synthesis of Double Transition Metal MAX for Future Machine-Learning Integrated Research: *Annabelle Bedford*[1]; Bethany Wright[1]; Brian Wyatt[1]; Anupma Thakur[1]; Babak Anasori[1]; [1]Purdue University

4:50 PM
From Bulk Synthesis to Storage: Cation-Substituted Transition Metal Dichalcogenides as Electrodes for Alkali Metal Ion Batteries: *Arijit Roy*[1]; Gurpreet Singh[1]; [1]Kansas State University

MATERIALS-ENVIRONMENT INTERACTIONS

Corrosion, Protection and Damage Monitoring of Advanced Materials in Natural and Specific Environments — Deepened Understandings of Corrosion And Protection Mechanisms with a Focus on Novel Materials, the Change of Corrosive Media and Coating

Sponsored by: ACerS Education and Professional Development Council, ACerS Energy Materials and Systems Division, TMS Energy Committee, TMS: Energy Conversion and Storage Committee, TMS: Corrosion and Environmental Effects Committee

Program Organizers: Xueyuan Zhang, Gamry Instruments; Guang-ling Song, Southern University of Science and Technology

Monday PM | September 29, 2025
D182 | Convention Center

Session Chairs: Qixin Zhou, The University of Akron; Guang-ling Song, Southern University of Science and Technology

3:00 PM Keynote
Corrosion Resistance of an Fe-Al Reactive Bond in Acidic Environments: *Jamieson Brechtl*[1]; Melanie Moses-DeBusk[1]; Yan-Ru Lin[1]; Ercan Cakmak[1]; Tracie Lowe[1]; Michael Thompson[1]; James Keiser[1]; Michael Kesler[1]; David Weiss[2]; Kashif Nawaz[1]; [1]Oak Ridge National Laboratory; [2]Loukus Technologies, Inc.

3:30 PM Break

3:50 PM Invited
Electrochemical Investigation of Pipeline Coating Disbondment Under Excessive Cathodic Protection: Yuhan Su[1]; *Qixin Zhou*[1]; [1]The University of Akron

4:20 PM
Biofouling and Corrosion of Magnesium Alloys WE43, AM60 and Mg-Zr-Gd-Nd-Y-Zn Alloy by Chlorella Vulgaris in Artificial Seawater: *Qi Fu*[1]; Guang-Ling Song[1]; Xinran Yao[1]; [1]Southern University of Science and Technology

4:40 PM
Evaluation of Direct Energy Deposited SS316L for CO2 Containing Environmental Service: *Adnan Khan*[1]; Vasanth C. Shunmugasamy[1]; Bilal Mansoor[1]; [1]Texas A&M University

5:00 PM
Study on the Corrosion Performance of Nickel Coating on Bipolar Plates for Anion Exchange Membrane Water Electrolysis: Yunze Dong[1]; Qing Mao[1]; Ruiyu Ma[2]; *Xueyuan Zhang*[3]; [1]DaLian University of Technology; [2]Institute of Corrosion Science and Technology; [3]Gamry Instruments

FUNDAMENTALS AND CHARACTERIZATION

Emergent Materials Under Extremes and Decisive In Situ Characterizations — Advanced Characterization of Fuel and Ceramic Materials Under Extreme Conditions

Sponsored by: ACerS Basic Science Division

Program Organizers: Xiaofeng Guo, Washington State University; Hua Zhou, Argonne National Laboratory; Xujie Lu, Center for High Pressure Science & Technology Advanced Research; Judith Driscoll, University of Cambridge; Andrew Strzelecki, Los Alamos National Laboratory

Monday PM | September 29, 2025
C162A | Convention Center

Session Chair: Xiaofeng Guo, Washington State University

2:00 PM Invited
In Situ Ion Irradiation of Uranium Carbide: Rashed Almasri[1]; Wei-Ying Chen[2]; Adrian Wagner[3]; Jennifer Watkins[3]; Laura Hawkins[3]; Yuhan Li[3]; Jian Gan[3]; *Lingfeng He*[1]; [1]North Carolina State University; [2]Argonne National Laboratory; [3]Idaho National Laboratory

2:30 PM Invited
Deployment and Testing of a Fiber-Based Instrument for In-Reactor Thermal Property Measurements at MIT Research Reactor: *Zilong Hua*[1]; Alex Pomo[1]; Colby Jensen[1]; Austin Fleming[1]; Weiyue Zhou[2]; Michael Short[2]; David Carpenter[2]; Caleb Picklesimer[1]; Robert Schley[1]; David Hurley[1]; [1]Idaho National Laboratory; [2]Massachusetts Institute of Technology

2:50 PM Invited
Metal Fuel Performance in Sodium-Cooled Fast Reactors: Post Irradiation Examination: *Tiankai Yao*[1]; Randall Fielding[1]; Yachun Wang[1]; Colby Jensen[1]; Douglas Porter[1]; [1]Idaho National Laboratory

3:10 PM Invited
In-Situ Characterization of High-Temperature Degradation of Nuclear Materials Under Extreme Environments: *Di Chen*[1]; [1]University of Nevada, Las Vegas

3:30 PM Break

3:50 PM Invited
Characterization of Phase Transformations in Oxides Driven by Far-From-Equilibrium Conditions: *Eric O'Quinn*[1]; John Hirtz[1]; Cale Overstreet[1]; William Reed[1]; Antonio Fuentes[2]; Maik Lang[1]; [1]University of Tennessee; [2]Cinvestav Unidad Saltillo

4:10 PM Invited
Emergent Material Characterization by Synchrotron-Based X-Ray Imaging, Spectroscopy and Scattering: *Wilson Chiu*[1]; [1]University of Connecticut

4:40 PM
Assessment of Defects in AlGaN Induced by High Electronic Excitations Using Ionoluminescence and RBS Channeling: *Savannah Watson*[1]; [1]University of Tennessee

5:00 PM
In Situ Tomography Testing in Extreme Environments: *Alex Arzoumanidis*[1]; [1]Psylotech Inc

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Energy Materials for Sustainable Development — Battery and Storage II

Sponsored by: ACerS Energy Materials and Systems Division

Program Organizers: Sepideh Akhbarifar, The Catholic University of America -Vitreous State Lab; Jianhua Tong, Clemson University; Yang Bai, University of Oulu; Eva Hemmer, University of Ottawa; Charmayne Lonergan, Missouri University of Science and Technology; Armin Feldhoff, Leibniz University Hannover; Takayoshi Katase, Institute of Science Tokyo; Bed Poudel, Pennsylvania State University; Ekaterina Pomerantseva, Drexel University; Kai He, University of California, Irvine

Monday PM | September 29, 2025
B234 | Convention Center

Session Chairs: Charmayne Lonergan, Missouri University of Science and Technology; Ekaterina Pomerantseva, Drexel University

2:00 PM Invited
Design, Development, and Characterization of Fast Ion Conductors: *Yan-Yan Hu*[1]; [1]Florida State University

2:30 PM Invited
Development of Electrolyte and Electrode Materials for Solid State Batteries: *Fudong Han*[1]; [1]Rensselaer Polytechnic Institute

3:00 PM Invited
Rapid Laser Sintering of Ga-Doped LLZO Solid-State Battery Electrolytes: Yanfei Cai[1]; Hua Huang[1]; Tianyi Zhou[1]; *Jianhua Tong*[1]; [1]Clemson University

3:30 PM Break

3:50 PM
Rapid and Scalable Microwave-Assisted Synthesis of Garnet-Type Solid Electrolytes for All-Solid-State Batteries: *Eric Yoshida*[1]; Kai He[1]; [1]University of California Irvine

4:10 PM
Potassium Ion Mobility in Khibinskite, $K_2ZrSi_2O_7$: *Daniel White*[1]; Yiying Wu[1]; [1]The Ohio State University

4:30 PM Invited
Thin-Film Li Glassy Solid Electrolytes as a New Functionality for Glass Enabling High Energy Density Li All Solid State Batteries: *Steve Martin*[1]; [1]Iowa State University

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Energy Materials for Sustainable Development — Thermoelectrics II

Sponsored by: ACerS Energy Materials and Systems Division

Program Organizers: Sepideh Akhbarifar, The Catholic University of America -Vitreous State Lab; Jianhua Tong, Clemson University; Yang Bai, University of Oulu; Eva Hemmer, University of Ottawa; Charmayne Lonergan, Missouri University of Science and Technology; Armin Feldhoff, Leibniz University Hannover; Takayoshi Katase, Institute of Science Tokyo; Bed Poudel, Pennsylvania State University; Ekaterina Pomerantseva, Drexel University; Kai He, University of California, Irvine

Monday PM | September 29, 2025
B235 | Convention Center

Session Chairs: Akira Nagaoka, University of Miyazaki; Takayoshi Katase, Institute of Science Tokyo

2:00 PM Invited
Promising Routes to Boost Thermoelectricity of p- and n-Type Full-Heusler Compounds: *Ernst Bauer*[1]; Michael Parzer[1]; Fabian Garmroudi[1]; Takao Mori[2]; [1]Technische Universität Wien; [2]NIMS, Tsukuba

2:30 PM Invited
Broadening Exploration of Chemical Systems for Half-Heusler Thermoelectrics: *Kamil Ciesielski*[1]; [1]Colorado School of Mines

3:00 PM Invited
Development of High-Entropy-TypeThermoelectric Materials: *Aichi Yamashita*[1]; [1]Tokyo Metropolitan University

3:30 PM Break

3:50 PM Invited
Synthesis and Thermoelectric Properties of ACu_7Q_4 Sulfoselenides: *James Hodges*[1]; [1]Pennsylvania State University

4:20 PM Invited
High Thermoelectric Performance in High-Quality Kesterite Single Crystals: *Akira Nagaoka*[1]; Shoma Miura[1]; Hiroki Ienaga[1]; Mao Mori[1]; Keita Nomoto[2]; Naoki Sato[3]; Kenji Yoshino[1]; Kensuke Nishioka[1]; [1]University of Miyazaki; [2]The University of Sydney; [3]National Institute for Materials Science

ARTIFICIAL INTELLIGENCE

Enhancing the Accessibility of Machine Learning-Enabled Experiments — Integrating AI, Automation, and Workflow for Intelligent Research Pipelines

Sponsored by: ACerS Basic Science Division

Program Organizers: Yongtao Liu, Oak Ridge National Laboratory; Arpan Biswas, University of Tennessee

Monday PM | September 29, 2025
D180 | Convention Center

Session Chairs: Yongtao Liu, Oak Ridge National Laboratory; Arpan Biswas, University of Tennessee Oak Ridge Innovation Institute

2:00 PM Invited
Adaptive Workflows for Lab of the Future: *Olga Ovchinnikova*[1]; [1]Thermo Fisher Scientific

2:30 PM Invited
High-Throughput, Ultra-Fast Laser Sintering of Ceramics and Machine-Learning Based Prediction on Processing-Microstructure-Property Relationships: Ningxuan Wen[1]; Jianhua Tong[1]; Rajendra Bordia[1]; Dongsheng Li[2]; Hai Xiao[1]; *Fei Peng*[1]; [1]Clemson University; [2]Advanced Manufacturing LLC

3:00 PM Invited
Pycroscopy, AEcroscopy, and Data Workflows: Integrating Customized Control, Data Analysis and Workflows in an Autonomous Microscopy Facility: *Rama Vasudevan*[1]; Jawad Chowdhury[1]; Narasimha Ganesh[1]; Zijie Wu[1]; Stephen Jesse[1]; Gerd Duscher[2]; Yongtao Liu[1]; [1]Oak Ridge National Laboratory; [2]University of Tennessee

3:30 PM Break

3:50 PM Invited
From Automated to Autonomous – Creating a General Active Learning Service for Self-Driving Laboratories: *Stephen DeWitt*[1]; Ankit Shrivastava[1]; Marshall McDonnell[1]; Singanallur Venkatakrishnan[1]; Chris Fancher[1]; Jorge Ramirez Osorio[1]; Paul Laiu[1]; Lance Drane[1]; Ayana Ghosh[1]; David Joy[2]; [1]Oak Ridge National Laboratory; [2]University of Auburn

4:20 PM Invited
Accelerating Scientific Discovery with Machine Learning: Data Analysis for Computational Beamlines: *Tanny Chavez*[1]; Xiaoya Chong[1]; Bowen Zheng[1]; Anas Nassar[1]; Monika Choudhary[1]; Wiebke Koepp[1]; Dylan McReynolds[1]; Slavomir Nemsak[1]; Alexander Hexemer[1]; [1]Lawrence Berkeley National Laboratory

4:50 PM Invited
Ptychography Data Pipelines at the Advanced Photon Source: *Steven Henke*[1]; Hannah Parraga[1]; Albert Vong[1]; Oliver Hoidn[2]; Nicholas Schwarz[1]; [1]Argonne National Laboratory; [2]SLAC National Accelerator Laboratory

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Frontiers in Thermal Energy Storage — Frontiers in Thermal Energy Storage

Sponsored by: ACerS Energy Materials and Systems Division, TMS: Energy Conversion and Storage Committee

Program Organizers: Shuang Cui, University of Texas at Dallas/ National Renewable Energy Laboratory; Judith Vidal, National Renewable Energy Laboratory; Luke McLaughlin, Sandia National Laboratories; Yi Zeng, National Renewable Energy Laboratory

Monday PM | September 29, 2025
B231 | Convention Center

Session Chair: Luke McLaughlin, Sandia National Laboratories

3:00 PM
Project POLAR – Pumped Thermal Energy Storage for a Remote Grid: *Timothy Held*[1]; [1]Echogen Power Systems

3:20 PM
Thermal Conductivity of Silica-Alumina Refractories for Thermal Energy Storage Applications: *Lucie Kotrbová*[1]; Petra Šimonová[1]; Willi Pabst[1]; [1]University of Chemistry and Technology, Prague

CERAMIC AND GLASS MATERIALS

Glasses and Optical Materials: Challenges, Advances, and Applications — Non-Oxide Glasses, Optics, and Glassy Electrolytes

Sponsored by: ACerS Glass and Optical Materials Division

Program Organizers: Morten Smedskjaer, Aalborg University; N. M. Anoop Krishnan, Indian Institute of Technology Delhi

Monday PM | September 29, 2025
B132 | Convention Center

Session Chairs: Morten Smedskjaer, Aalborg University; N. M. Anoop Krishnan, IIT Delhi

2:00 PM Invited
Challenges in Engineering Non-Oxide Optical Nanocomposites: Hitting Performance Metrics: *Kathleen Richardson*[1]; Rashi Sharma[1]; Myungkoo Kang[2]; [1]University of Central Florida; [2]NYSCC at Alfred University

2:30 PM
Multi-Faceted Quantitative Cross-Correlating Characterization and Phase Mapping of Gradient Refractive Index Chalcogenide Glass-Ceramic Bulk Nanocomposites: *Zephyr Ramsey*[1]; Gil Blas Sop Tagne[1]; Lam Tran[1]; Patrick Lynch[1]; Jessica Lyza[1]; Christian Cano[2]; Phillip Marrero[2]; Roberto Alvarez[3]; Daniel Wiedeman[3]; Rashi Sharma[3]; Nicholas Kochan[4]; Kathleen Richardson[3]; Steven Feller[2]; Darren Stohr[1]; Collin Wilkinson[1]; Rebecca Welch[1]; S.K. Sundaram[1]; Scott Misture[1]; Kun Wang[1]; Myungkoo Kang[1]; [1]New York State College of Ceramics, Alfred University; [2]Coe College; [3]CREOL, College of Optics and Photonics, University of Central Florida; [4]Physical Sciences Inc.

2:50 PM
Accelerated Low-Temperature Stabilization of Glasses via Thermo-Ultrasonication: *Lam Tran*[1]; Patrick Lynch[1]; Ecem Yamac[1]; Gil Sop Tagne[1]; Rebecca Welch[1]; William LaCourse[1]; Collin Wilkinson[1]; Myungkoo Kang[1]; Stuart Yaniger[1]; Cristian Cano[2]; Philip Marrero[2]; Aaron Phillips[2]; Steven Feller[2]; Daniel Wiedeman[3]; Rashi Sharma[3]; Kathleen Richardson[3]; [1]Alfred University; [2]Coe College; [3]College of Optics and Photonics University of Central Florida

3:10 PM Invited
Thin-Film Glassy Solid Electrolytes as a New Functionality for Glass Enabling High Energy Density Li and Na All Solid State Batteries: *Steve Martin*[1]; [1]Iowa State University

3:40 PM Break

4:00 PM
Correlating Structure With Ion Dynamics in Disordered Solid-State Electrolytes: *Morten Smedskjaer*[1]; Zhimin Chen[1]; Tao Du[1]; [1]Aalborg University

4:20 PM
A Comparative Study of Europium Doped Materials for White Light Generation: *Yannik Palmer-Tesema*[1]; [1]Alabama A&M

4:40 PM
Nanoparticle Morphology Dependent Nonlinear Optical Behaviour in Bismuth Borate Glasses: *Shivani Singla*[1]; Venu Achanta[2]; Gopi Sharma[3]; [1]Chandigarh University; [2]NPL, Delhi; [3]Kanya Maha Vidyalaya

5:00 PM
Interfacial Mechanisms for Enhanced Photoluminescence in AgI-Doped CsPbBrI Perovskite Quantum Dot Glass: *Yongmin Duan*[1]; Xingzhen Huang[1]; Shugang Li[1]; Wenyan Zheng[1]; Junjie Zhang[1]; [1]China Jiliang University

FUNDAMENTALS AND CHARACTERIZATION

Grain Boundaries, Interfaces, and Surfaces: Fundamental Structure-Property-Performance Relationships — Surfaces and Heterointerfaces

Sponsored by: ACerS Basic Science Division

Program Organizers: Melissa Santala, Oregon State University; Catherine Bishop, University of Canterbury; Klaus van Benthem, The University of Alabama; Wayne Kaplan, Technion - Israel Institute of Technology

Monday PM | September 29, 2025
C161A | Convention Center

Session Chairs: Melissa Santala, Oregon State University; Ivar Reimanis, Colorado School of Mines

2:00 PM Invited
Clay-Based Ceramics: A Material Full of Interfaces and Surfaces: *Ivar Reimanis*[1]; Ryan McGinnis[1]; Sandrine Ricote[1]; Grover Coors[2]; Rachel Marder[3]; Wayne Kaplan[3]; [1]Colorado School of Mines; [2]Hydrogen Helix, LLC; [3]Technion

2:30 PM
Quantifying Surface and Grain-Boundary Energies in Yttria-Stabilized Zirconia: Influence of Grain Size and Sintering Conditions: *Mst Sharmin Mostari*[1]; Ricardo Castro[1]; [1]Lehigh University

2:50 PM Invited
On the Soda-Lime Glass Surface and Its Interactions With Water: *Mattia Biesuz*[1]; [1]University of Trento

3:20 PM Break

3:40 PM Invited
Evolution of Metal Nanoparticles at Solid–Gas and Solid–Solid Interfaces: Segregation Reactions in Ceramic Matrices: *Simone Mascotto*[1]; Benjamin Rudolph[2]; [1]University of Koblenz; [2]University of Hamburg

4:10 PM
Preliminary Investigation of Metal-SiC Interface Behavior via Deposition of Mo and W for High-Temperature Applications: *Stan Watson Teagho Voufo*[1]; David Field[1]; [1]Washington State University

4:30 PM
Developments in XPS Surface Analysis: Femtosecond Laser Ablation Depth Profiling: *James Lallo*[1]; Tim Nunney[1]; Richard White[1]; Mark Baker[2]; [1]Thermo Fisher Scientific; [2]University of Surrey

FUNDAMENTALS AND CHARACTERIZATION

High-Entropy Materials: Solid Solutions, Intermetallics, Ceramics, Functional Materials and Beyond VI — Experiments: Non-Alloys

Sponsored by: TMS: Alloy Phases Committee, ACerS Basic Science Division

Program Organizers: Shuozhi Xu, University of Oklahoma; Yiquan Wu, Alfred University; Yu Zhong, Worcester Polytechnic Institute; Michael Gao, National Energy Technology Laboratory; Xingbo Liu, West Virginia University; Peter Liaw, University of Tennessee; Jian Luo, University of California, San Diego; Mitra Taheri, Johns Hopkins University; Amy Clarke, Los Alamos National Laboratory

Monday PM | September 29, 2025
C170 | Convention Center

Session Chairs: Rubayet Tanveer, University of Tennessee-Knoxville; Antonio Fuentes, Cinvestav del IPN

3:00 PM Invited
Local Disorder Effects on Structure–Property Correlations in Configurationally Enriched Yttrium Iron Garnets: *Rubayet Tanveer*[1]; Dylan Windsor[1]; Cale Overstreet[1]; Tatenda Kanyowa[1]; Bin Hu[1]; Maik Lang[1]; Haixuan Xu[1]; Veerle Keppens[1]; William Weber[1]; [1]University of Tennessee-Knoxville

3:30 PM Break

3:50 PM Invited
Mn and Fe in Rock Salt Oxides: Thermodynamics-Inspired High-Entropy Oxide Synthesis: *Matthew Furst*[1]; Joseph Petruska[1]; Dhiya Srikanth[1]; Yueze Tan[1]; Jacob Sivak[1]; Gerald Bejger[2]; Christina Rost[2]; Susan Sinnott[1]; Long-Qing Chen[1]; Saeed Almishal[1]; Jon-Paul Maria[1]; [1]The Pennsylvania State University; [2]Virginia Polytechnic Institute and State University

4:20 PM
Structural Evolution of Compositionally Complex Pyrochlore Oxides Under Swift Heavy Ion Irradiation: *Kenneth Sanders*[1]; George Adamson[1]; Cale Overstreet[1]; Eric O'Quinn[1]; Tao Liang[1]; Haixuan Xu[1]; Pascal Simon[2]; Jesse Smith[3]; Joerg Neuefeind[4]; Joshua Safin[1]; Katharine Page[1]; David Sprouster[5]; Maik Lang[1]; [1]University of Tennessee, Knoxville; [2]GSI Helmholtzzentrum für Schwerionenforschung; [3]Argonne National Laboratory; [4]Oak Ridge National Laboratory; [5]Stony Brook University

4:40 PM Invited
Tuning the Structural and Electronic Properties of High Entropy Oxide Thin Films for Water Oxidation: *Le Wang*[1]; Minju Choi[1]; Krishna Prasad Koirala[1]; Mark Bowden[1]; Hsin-Mei Kao[1]; Dongchen Qi[1]; Anton Tadich[1]; Zihua Zhu[1]; Yingge Du[1]; [1]Pacific Northwest National Laboratory

5:10 PM Invited
Advanced Synthesis of Compositionally Complex Carbides Using Polymer-Derived Ceramics for Extreme Environmental Applications: *Dustin Gilmer*[1]; Erik Akbar[1]; Jacob Fischer[1]; Roo Walker[1]; [1]University of Tennessee

5:40 PM Invited
Structural Systematics of a Fluorite-Type Solid Solution in Compositionally Complex Oxides: Goretti Fraustro-Castañeda[1]; Sagrario Montemayor[2]; William Reed[3]; Eric O'Quinn[3]; Maik Lang[3]; *Antonio Fuentes*[1]; [1]Cinvestav del IPN; [2]Centro de Investigacion en Quimica Aplicada; [3]University of Tennessee

CERAMIC AND GLASS MATERIALS

Manufacturing and Processing of Advanced Ceramic Materials — New Frontiers in Advanced Manufacturing of Ceramic Materials

Sponsored by: ACerS Manufacturing Division

Program Organizers: Bai Cui, University of Nebraska Lincoln; James Hemrick, Oak Ridge National Laboratory; Eric Faierson, Iowa State University; Keith DeCarlo, Blasch Precision Ceramics

Monday PM | September 29, 2025
B240/241 | Convention Center

Session Chairs: Gregory Thompson, University of Alabama; Manoj Mahapatra, University of Alabama at Birmingham; Alexander Dupuy, University of Connecticut

2:00 PM Invited
Processing Diagrams for Phase and Microstructural Formations in Manufacturing Laser Chemical Vapor Deposited TiC Fibers: Kendall Mitchell[1]; Michael Pavel[1]; *Gregory Thompson*[1]; [1]University of Alabama

2:30 PM Invited
Superplastic Deformation in High Entropy Oxides: *Alexander Dupuy*[1]; Julie Schoenung[2]; [1]University of Connecticut; [2]Texas A&M University

3:00 PM
The Joining and Fabrication of Ceramic Matrix Composites With Embedded Wire Chemical Vapor Deposition (EW-CVD): *Seth Shuster*[1]; Joseph Pegna[1]; Shay Harrison[1]; Kirk Williams[1]; Jeff Vervlied[1]; [1]Free Form Fibers

3:20 PM Break

3:40 PM
Towards Complex Shaping of UHTCs: From Particle Packing to Mechanical Behavior: *Hui-Chun Yu*[1]; Carolina Tallon[1]; [1]Virginia Tech

4:00 PM Invited
Gahnite (ZnAl2O4) as an Alternative for Chrome-Free Spinel (MgAl2O4) Refractories: *Manoj Mahapatra*[1]; Rajat Ramteke[1]; James Hemrick[2]; [1]University of Alabama at Birmingham; [2]Oak Ridge National Laboratory

4:30 PM
Microstructural Analysis of SiC/SiC Ceramic Composite Tubes Produced via Filament Winding, Vacuum Infusion, Pyrolysis and CVI Densification: *Nadim Hmeidat*[1]; Corson Cramer[1]; Julio Ortega[1]; Brittany Rodriguez[1]; Ahmed Hassen[1]; Takaaki Koyanagi[1]; [1]Oak Ridge National Laboratory

4:50 PM
Evaluating and Predicting Color Mixing of High-Temperature Ceramic Stains: *Grace Dunham*[1]; Ally Bruno[1]; William Carty[1]; [1]Alfred University

5:10 PM
Innovative Electrostatic Painting of 3Y-TZP With Epoxy Powder for Enhanced Bond Shear Strength of Dental Prostheses to Dentin: *Carlos Elias*[1]; Alessandro Thomaz[1]; Heraldo Salomão[1]; Celso Resende[2]; Claudinei dos Santos[3]; [1]Military Institute of Engineering; [2]ProtMat Materialis Avançados; [3]Universiadade do Estado do Rio de Janeiro

---

BIOMATERIALS

Next Generation Biomaterials — Next Generation Biomaterials II

Sponsored by: ACerS Bioceramics Division, TMS: Biomaterials Committee

Program Organizers: Roger Narayan, University of North Carolina; Tanveer Tabish, University of Oxford

Monday PM | September 29, 2025
C171 | Convention Center

Session Chairs: Kate Fox, RMIT University; Tanveer Tabish, University of Oxford

---

3:00 PM
Battery-Operated Pressure Spinning of Biomaterials: *Mehmet Onur Aydogdu*[1]; Mohan Edirisinghe[1]; [1]University College London

3:20 PM Break

3:40 PM Invited
Development of New Diamond Biomaterials: *Kate Fox*[1]; [1]RMIT University

4:00 PM
Bone Stress and Primary Stability of a Dental Implant Using Strain and Torque Measurements: *Carlos Elias*[1]; Larissa Ramos Nascimento[1]; Guilherme Torelly[1]; [1]Military Institute of Engineering

4:20 PM Invited
Silicone-Based Emulsions for High Precision Manufacturing of Highly Porous Bioceramic Scaffolds: Hamada Elsayed[1]; Barbora Nikendey Holubová[2]; *Enrico Bernardo*[1]; [1]University of Padova; [2]Technical University of Liberec

4:40 PM
Next-Generation of Soft Bioelectronic Devices From Nature-Inspired Materials via Pressurized Spinning: *Seda Gungordu Er*[1]; Mohan Edirisinghe[1]; [1]University College London

5:00 PM Invited
Theranostic Application of Polyethyleneimine Stabilized Gold Nanoparticles: *Atul Tiwari*[1]; Roger Narayan[2]; [1]Indian Institute of Technology (BHU), Varanasi, India; [2]University of North Carolina and North Carolina State University

---

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Phasing Out Carbon: Phase Transformation Challenges in Decarbonization Technologies — Phasing Out Carbon: Phase Transformation Challenges in Decarbonization Technologies

Sponsored by: TMS: Phase Transformations Committee

Program Organizers: Matthew Steiner, University of Cincinnati; Eric Payton, University of Cincinnati; James Zuback, National Institute of Standards and Technology; Alec Saville, Elementum 3D; Bryan Lim, Oak Ridge National Laboratory; Ian Zuazo, ArcelorMittal Global R&D - Industeel

Monday PM | September 29, 2025
B244/245 | Convention Center

Session Chairs: Matthew Steiner, University of Cincinnati; Eric Payton, University of Cincinnati

---

3:00 PM Invited
Transition From Natural Gas Combustion to Hydrogen Combustion: Impact on Steel Quality during Reheating of Carbon Steels: *Amaia Iza-Mendia*[1]; Yaiza Montaña[1]; Xabier Zapirain[1]; [1]Ceit-Basque Research & Technology Alliance (BRTA) and Universidad de Navarra, Tecnun

3:30 PM Break

3:50 PM Invited
Enabling Ore-to-Part Manufacturing of Sustainable Iron: Coupling Hydrogen Plasma Reduction With Industrial Waste Red Mud as Flux: *Rangasayee Kannan*[1]; Adam Stevens[1]; Vanshika Singh[1]; Brian Hicks[1]; Sudarsanam Babu[2]; Peeyush Nandwana[1]; [1]Oak Ridge National Laboratory; [2]University of Maryland

4:20 PM
Anomalous Behavior of Dilute Phosphorus Alloying on Phase Transformations in the Fe-Ni System: *Ugochukwu Ochieze*[1]; Matthew Steiner[1]; [1]University of Cincinnati

PROCESSING AND MANUFACTURING

Processing and Performance of Materials Using Microwaves, Electric and Magnetic Fields, Ultrasound, Lasers, and Mechanical Work – Rustum Roy Symposium — Rustum Roy Symposium - Session II

Sponsored by: ACerS Basic Science Division

Program Organizers: Morsi Mahmoud, Abdullah Al Salem University (AASU); Rishi Raj, University of Colorado; Motoyasu Sato, Chubu University; Dinesh Agrawal, Pennsylvania State University; Christina Wildfire, National Energy Technology Laboratory; Guido Link, Karlsruhe Institute of Technology; Daudi Waryoba, Pennsylvania State University

Monday PM | September 29, 2025
B233 | Convention Center

Session Chairs: Daudi Waryoba, Penn State DuBois; Hideyuki Kanematsu, National Institute of Technology (NIT), Suzuka College

2:00 PM Keynote
A New State of Matter Induced by the Flash Process: *Rishi Raj*[1]; Devinder Yadav[1]; [1]University of Colorado

2:30 PM
Electrophoretic Alignment of Boron-Nitride Nanotubes Within Silicone Polymers: E-field Control of Anisotropic Thermal Conductivity: *Christopher Kovacs*[1]; [1]Scintillating Solutions LLC

2:50 PM Invited
Hybrid Microwave Processing, Characterization, and Hot Corrosion of Yttria Stabilized Zirconia: *Morsi Mahmoud*[1]; Mohammed Arif[2]; Nestor Ankah[2]; Zuhair Gasem[2]; [1]Abdullah Al Salem University (AASU); [2]King Fahd University of Petroleum and Minerals

3:20 PM Break

3:40 PM
Finite Element Modeling of Temperature-Dependent Microwave Dielectric Properties in Engineered Particulate Composites: *Ansan Pokharel*[1]; Divakar Aireddy[2]; Pranjali Muley[2]; Christina Wildfire[2]; Terence Musho[1]; [1]West Virginia University; [2]National Energy Technology Laboratory

4:00 PM
Ultra-Fast Sintering of SOECs Electrodes Ceramics: Microstructure Optimization in Seconds via Joule-Driven Heating: *Javier Mena*[1]; Edward Sabolsky[1]; Katarzyna Sabolsky[1]; Tugrul Yumak[1]; Mason Cavalier[1]; Davis Warmuth[1]; Emrah Demirkal[1]; [1]West Virginia University

4:20 PM
Extra "Knob" to Microstructural Engineering for Metals and Alloys via Transient Athermal Electro-Pulsing Treatment: *Fei Yin*[1]; Shan Hu[1]; [1]Wuhan University of Technology

4:40 PM
Enhancing Radiation Resilience of Wide-Bandgap Semiconductors and Alloys via Electron Wind Force Annealing: *Md Hafijur Rahman*[1]; Aman Haque[1]; [1]Pennsylvania State University

5:00 PM
Precision Laser Joining of Copper Busbars With Minimal Thermal Damage for Power Semiconductor Modules: *Yeji Yoo*[1]; Eunjoon Chun[1]; Semin Park[2]; Keunjae Lee[2]; [1]Pukyong National University; [2]Hyundai Mobis Co., Ltd

5:20 PM
Optimizing Ultrafast Laser Bessel Beam Glass Cutting via Machine Learning: *Conrad Kuz*[1]; Andy Lee[1]; Justin Twardowski[1]; Mohamed Yaseen Noor[1]; Enam Chowdhury[1]; [1]The Ohio State University

5:40 PM
Wide Two-Transition Magnetocaloric Effect in $Ho_{1-x}Ce_xNi$ (x = 0-0.1) From 4-35 K: *Casen Legreid*[1]; Ben Hilliard[2]; [1]Iowa State University; [2]Ames National Laboratory

SPECIAL TOPICS

Plenary Sessions — ACerS Plenary Session

Tuesday AM | September 30, 2025
Short North Ballroom | Convention Center

8:00 AM Introductory Comments

8:05 AM Plenary
ACerS Edward Orton Jr. Memorial Lecture: Ceramics for Structural Applications – Overcoming the Challenges of This Formidable Material: *Tatsuki Ohji*[1]; [1]Yokohama National University; Nagoya Institute of Technology; National Institute of Advanced Industrial Science and Technology

8:45 AM Award Presentation

8:50 AM Concluding Comments

ADDITIVE MANUFACTURING

Additive Manufacturing Modeling, Simulation, and Machine Learning: Microstructure, Mechanics, and Process — AM Modeling - Mechanical Properties

Sponsored by: TMS: Additive Manufacturing Committee, TMS: Integrated Computational Materials Engineering Committee

Program Organizers: Jing Zhang, Purdue University; Li Ma, Johns Hopkins Applied Physics Laboratory; Charles Fisher, Office Of Naval Research; Brandon McWilliams, US Army Research Laboratory; Yeon-Gil Jung, Korea Institute of Ceramic Engineering & Technology

Tuesday AM | September 30, 2025
C150 | Convention Center

Session Chairs: Jing Zhang, Purdue University; Li Ma, Johns Hopkins University Applied Physics Laboratory; Charles Fisher, NSWC Carderock Division, Naval Surface Warfare Center ; Brandon McWilliams, CCDC Army Research Laboratory; Yeon-Gil Jung, Changwon National University

8:00 AM
3D Surrogate Modeling of Elasto-Viscoplastic FFT Simulations for Porosity-Driven Fatigue Prediction in Additive Manufacturing: *Daniel Diaz*[1]; Justin Miner[1]; Sneha Narra[1]; Anthony Rollett[1]; [1]Carnegie Mellon University

8:20 AM
Addressing the Portevin-Le Chatelier Effect in IN 939 Additively Manufactured Nickel-Based Superalloy: *Daniel Moreno*[1]; Yohanan Nahmana[1]; Rony Shneck[1]; Moshe Nahmany[1]; [1]BSEL-Ltd Israel

8:40 AM
Modelling the Effects of Composition Variation and Heat Treatment on Microstructure of TiAl6V4 Produced Via Laser Powder Bed Fusion: *Sierra Green*[1]; Hasan Jame[1]; S. Mohadeseh Taheri-Mousavi[1]; Anthony Rollett[1]; Bryan Webler[1]; [1]Carnegie Mellon University

9:00 AM
Investigating Mechanical Anisotropy in Additively Manufactured 316L Stainless Steel: Som Dixit[1]; Pauline Smith[2]; *Shunyu Liu*[1]; [1]Clemson University; [2]DEVCOM Army Research Laboratory

9:20 AM
Robust Additive Manufacturable Ni Superalloys Designed by the Integrated Optimization of Local Elemental Segregation and Cracking Susceptibility Criteria: *Hao Yu*[1]; [1]Northeastern University

9:40 AM
A Micromechanical Comparison of Wrought and Additively Manufactured Inconel 718 Subject to High Strain Rates: *Katie Bruggeman*[1]; Anthony Palazotto[1]; Dan Young[1]; [1]Wright State University

10:00 AM Break

10:20 AM
Global Sensitivity Process Diagrams to Visualize the Impact of Composition Variability on Laser-based Powder Bed Fusion of Nickel Alloy 718: *Li Ma*[1]; Pranav Karve[2]; Hasan Jame[3]; Sankaran Mahadevan[2]; Mohadeseh Taheri-Mousavi[3]; Steven Storck[1]; Morgan Trexler[1]; Somnath Ghosh[4]; Anthony Rollett[3]; Brendan Croom[1]; [1]Johns Hopkins University Applied Physics Laboratory; [2]Vanderbilt University; [3]Carnegie Mellon University; [4]Johns Hopkins University

10:40 AM
A Crystal Plasticity Approach to Predict Fatigue Life With Respect to Critical Defects in Additively Manufactured AlSi10Mg: *Kamin Tahmasbi*[1]; Meysam Haghshenas[1]; Mohammadreza Yaghoobi[1]; [1]University of Toledo

11:00 AM
A Crystal Plasticity Finite Element Approach to Understand Effect of Acoustoplasticity on FCC and BCC Structures: *Upama Biswas Tonny*[1]; Chang Yang[2]; Liming Xiong[2]; Sunil Chakrapani[1]; [1]Michigan State University; [2]North Carolina State University

11:20 AM
Application of Ductile Fracture Modeling to Complex, Additively Manufactured SS316L Structure: *Erik Furton*[1]; Allison Beese[1]; [1]Pennsylvania State University

11:40 AM
A Unified Model for Accurate Prediction of Powder Densification and Shape Distortion in Large-Scale Components Using Powder Metallurgy Hot Isostatic Pressing (PM-HIP): *Subrato Sarkar*[1]; Jason Mayeur[1]; KPK Ajjarapu[1]; Fred List[1]; Soumya Nag[1]; Ryan Dehoff[1]; [1]Oak Ridge National Laboratory

ADDITIVE MANUFACTURING

Additive Manufacturing, Directed Energy Deposition of Metals: Processing – Microstructure – Mechanical Property Relationships — Monitoring, Modeling, and Functionally Grading / Arc Based DED and Copper Alloys

Sponsored by: TMS: Additive Manufacturing Committee

Program Organizers: Jonah Klemm-Toole, Colorado School of Mines; Joy Gockel, Colorado School of Mines

Tuesday AM | September 30, 2025
C160B | Convention Center

Session Chairs: Samantha Webster, Colorado School of Mines; Bradley Jared, University of Tennessee, Knoxville

8:00 AM Invited
High-Speed Schlieren Imaging of Laser Powder Blown Directed Energy Deposition: *Samantha Webster*[1]; Steven Mates[2]; Carelyn Campbell[2]; [1]Colorado School of Mines; [2]National Institute of Standards and Technology

8:40 AM
Towards Statistical Microstructure Quantification to Guide the Directed Energy Deposition Process: *Bhagyashree Prabhune*[1]; Patxi Fernandez-Zelaia[1]; Gyan Shankar[1]; Brian Jordan[1]; Michael Kirka[1]; Yousub Lee[1]; [1]Oak Ridge National Laboratory

9:00 AM
Inhomogeneities in Directed Energy Deposition of Refractory Metals with Different Melting Temperatures and Mass Densities: *Anthony Stair*[1]; Bryan Webler[1]; Jack Beuth[1]; Maarten de Boer[1]; [1]Carnegie Mellon University

9:20 AM
Thermal and Microstructural Analysis of Inconel-GRCop Dissimilar Joint Fabricated by Powder-Based Laser Directed Energy Deposition: *Nahal Ghanadi*[1]; Somayeh Pasebani[1]; [1]Oregon State University

9:40 AM
Additive Manufacturing of Functionally Graded Materials: *Abdul Sayeed Khan*[1]; Brian Jordan[1]; Yousub Lee[2]; James Haley[1]; Soumya Nag[1]; [1]Oak Ridge National Laboratory

10:00 AM Break

10:20 AM
Effect of Precipitation on Fatigue Crack Growth and Cyclic Deformation in Additively Manufactured Nickel Aluminum-Bronze: *Nathan Heniken*[1]; Jiashi Miao[1]; Veronika Mazanova[2]; Aeriel Murphy-Leonard[1]; [1]Ohio State University; [2]Institute of Physics of Materials, Czech Academy of Sciences

10:40 AM
Influence of Part Orientation on Microstructure and Mechanical Properties of Wire-Arc Additively Manufactured Cu-30Ni Alloy: *Oluwatumininu Adeeko*[1]; John Lewandowski[1]; [1]Case Western Reserve University

11:00 AM Invited
Multi-Mode Defect Monitoring for Wire-Arc Additive Manufacturing: *Bradley Jared*[1]; [1]University of Tennessee, Knoxville

11:40 AM
Very High Cycle Fatigue Behavior of Wire Arc Additively Manufactured Nickel Aluminum Bronze in Ambient Air and Corrosive Environments: *Mohammad Bagher Mahtabi*[1]; Meysam Haghshenas[1]; Mojtaba Roshan[1]; Wiktor Bednarczyk[2]; [1]University of Toledo; [2]AGH University of Krakow

ADDITIVE MANUFACTURING

Additive Manufacturing: Design, Materials, Manufacturing, Challenges and Applications — Additive Manufacturing: Design, Materials, Manufacturing, Challenges and Applications - Session II

Sponsored by: ACerS Other

Program Organizers: Navin Manjooran, Solve; Gary Pickrell, Virginia Tech

Tuesday AM | September 30, 2025
C151 | Convention Center

Session Chairs: Gary Pickrell, Virginia Tech; Navin Manjooran, Solve

8:00 AM Introductory Comments

8:30 AM
Additive Manufacturing of High-Strength Al-Ti Composites: *Yu Zou*[1]; [1]University of Toronto

8:50 AM
Additive Manufacturing of Multifunctional Fe–Cr–Al-Base Alloys via Laser Powder Bed Fusion: *Sydney Lynch*[1]; Thinh Huynh[1]; Kevin Graydon[1]; Brendan Ensor[2]; Paul Day[2]; Kiran Nimishakavi[2]; Yongho Sohn[1]; [1]University of Central Florida; [2]Naval Nuclear Laboratory

9:10 AM
Advancing Automotive Lightweighting: Heat-Treatment Optimization and rapid Additive Manufacturing of AlSi10Mg Alloy for Body and Chassis Systems: *Hyomoon Joo*[1]; [1]Hyundai Motor Group

9:30 AM
Breaking the Myth of Spherical Powders: Pure Tungsten Manufactured by Electron Beam Powder Bed Fusion (PBF-EB) Using Cost-Effective Powder of Irregular Shape: *Ian Crawford*[1]; William Sjostrom[2]; Stefan Roos[2]; Carlos Botero[2]; Lidija Stjepanic Peric[3]; Ulf Ackelid[3]; Arun Balachandramurthi[3]; [1]Freemelt Americas Inc.; [2]Mid-Sweden University; [3]Freemelt AB

9:50 AM
Design of New NiCoCr Alloys for Additive Manufacturing through High-Throughput Experiments: *Ajay Talbot*[1]; Yu Zou[1]; [1]University of Toronto

10:10 AM Break

10:30 AM
Comparative Study on Irradiation Resistance of Additively Manufactured 316L Stainless Steel and CoCrFeNi High-Entropy Alloys: Som Dixit[1]; Yongqiang Wang[2]; *Shunyu Liu*[1]; [1]Clemson University; [2]Los Alamos National Laboratory

10:50 AM
Enhance Electrical Conductivity and Mechanical Properties of Cu-Cr Alloys Through Rapid Directional Solidification During Laser Powder Bed Fusion: *Runzhi Zhang*[1]; Tao Sun[2]; Ji Ma[1]; [1]University Of Virginia; [2]Northwestern University

11:10 AM
Hybrid Multi-Axis Additive and Subtractive Manufacturing: Toolpath Design and Simulation for Thermal and Geometric Control: *Yousub Lee*[1]; Miguel Hoffmann Rodriguez[1]; Xinyi Xiao[2]; Thomas Feldhausen[1]; [1]Oak Ridge National Laboratory; [2]University of North Texas

ADDITIVE MANUFACTURING

Additive Manufacturing: Development of Powders — Foundations and Advances in Atomization Refractory Powder Production

Sponsored by: TMS: Additive Manufacturing Committee

Program Organizers: Tim Horn, North Carolina State University; Ian McCue, Northwestern University; Gianna Valentino, University of Maryland; Iver Anderson, Iowa State University Ames Laboratory; Michael Kirka, Oak Ridge National Laboratory

Tuesday AM | September 30, 2025
C160A | Convention Center

Session Chairs: Tim Horn, North Carolina State University; Chris Rock, North Carolina State University

8:00 AM Invited
Industrialization Needs for New Powder Alloys: *John Foltz*[1]; [1]ATI Specialty Materials

8:40 AM
Gas Atomization and Additive Manufacturing of Nb-W-Zr Alloy: *John Reidy*[1]; Gianna Valentino[2]; Ian McCue[1]; [1]Northwestern University; [2]University of Maryland

9:00 AM
Gas Atomization and Powder Characterization of Novel Niobium Alloys for High-Temperature Applications: *Emre Tekoglu*[1]; Benjamin Labiner[1]; Jenny Forrester[1]; Cristopher Rock[1]; Tim Horn[1]; [1]North Carolina State University

9:20 AM
Production of Additive Manufacturing Compatible Powders of Multi-Principal Element Alloys Via Ultrasonic Atomization: *Brendon Dodge*[1]; Suyash Niraula[1]; Thomas Berfield[1]; Justin Gillham[1]; Rosa Shokri[1]; [1]University of Louisville

9:40 AM
Ultrasonic Atomization of Refractory Medium Entropy Alloys Powders: *Tomasz Choma*[1]; Bartosz Kalicki[1]; Jakub Ciftci[1]; Lukasz Zrodowski[1]; Bartosz Moronczyk[1]; [1]Amazemet Sp. Z O. O.

10:00 AM Break

10:20 AM
Development of Refractory Spherical Powders by Plasma Technique: Leo V. M. Antony[1]; *Dustin Reitmeyer*[1]; Leo Baird[1]; David Rigg[1]; Damon Fields[1]; [1]SCM Metal Products

10:40 AM
Microstructure Evolution, Mechanical Behavior, and Additive Manufacturing Processability of Novel Mo-Si-B Alloys: *Haozhi Zhang*[1]; Victoria Himelstein[1]; Jenny Forrester[1]; Sourabh Saptarshi[1]; Saket Thapliyal[2]; Patxi Fernandez-Zelaia[2]; Christopher Ledford[2]; Michael Kirka[2]; Tim Horn[1]; [1]North Carolina State University; [2]Oak Ridge National Laboratory

---

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Advancements in Molten Salt/Metal Technology in Energy Applications: From Atoms to Plants — Molten Salt Fundamentals, Properties, and Simulation

Sponsored by: TMS: Nuclear Materials Committee

Program Organizers: Tae-sic Yoo, Idaho National Lab; Ruchi Gakhar, Idaho National Laboratory; Rocio Rodriguez Laguna, Idaho National Laboratory; Michael Simpson, University of Utah; Hojong Kim, Pennsylvania State University

Tuesday AM | September 30, 2025
B242/243 | Convention Center

Session Chairs: Rocio Rodriguez Laguna, Idaho National Laboratory; Ruchi Gakhar, Idaho National Laboratory

---

8:00 AM
Accurate Free Energy Simulations in Molten Salts with Machine Learning Potentials and High-Level Quantum Chemical Methods: *Vyacheslav Bryantsev*[1]; Luke Gibson[1]; Rajni Chahal[1]; [1]Oak Ridge National Laboratory

8:30 AM
Development of a Thermal Conductivity Model for Molten Salts Based on the Pair Distribution Function: Jacob Numbers[1]; Troy Munro[1]; Tony Birri[2]; Nick Termini[2]; *Isaac Walker*[1]; Tyler Hamm[1]; [1]Brigham Young University; [2]Oak Ridge National Laboratory

8:50 AM
Experimental Calorimetry of Heat Capacity and Mixing Enthalpy of Molten Chloride Salts: *Xiaofeng Guo*[1]; Hongwu Xu[2]; Zi-Kui Liu[3]; Vyacheslav Bryantsev[4]; Aurora Clark[5]; Dev Chatterjee[6]; [1]Washington State University; [2]Arizona State University; [3]Pennsylvania State University; [4]Oak Ridge National Laboratory; [5]University of Utah; [6]TerraPower

9:20 AM
Molten Salt Properties Capabilities at ORNL: *Ryan Chesser*[1]; Nicholas Termini[1]; Anthony Birri[1]; [1]Oak Ridge National Laboratory

9:50 AM Break

10:05 AM
The Effect of Irradiation on the Densities of Chloride-Bearing Molten Salts: *Joanna McFarlane*[1]; Molly Ross[1]; Daniel Orea[1]; Yuxuan Zhang[1]; Kevin Robb[1]; Jisue Braatz[1]; Sean Fayfar[2]; Boris Khaykovich[2]; Thomas Bork[2]; [1]Oak Ridge National Laboratory; [2]Massachusetts Institute of Technology

10:35 AM
Radiation-Induced Iodine Chemistry in High-Temperature Molten Salts: *Gregory Holmbeck*[1]; Jacy Conrad[1]; Alejandro Ramos Ballesteros[1]; Stephanie Castro Baldivieso[1]; Andrew Cook[2]; Ruchi Gakhar[1]; [1]Idaho National Laboratory; [2]Brookhaven National Laboratory

11:05 AM
Synchrotron-Based X-Ray Spectroscopy of Molten Salts: *Wilson Chiu*[1]; [1]University of Connecticut

11:35 AM
Laser-Spectroscopy Testbed for Impurity Monitoring in High-Temperature Reactors: *Adam Burak*[1]; Leandro Frigerio[2]; Joseph Brown[1]; Teddy Kent[3]; Joe Craparo[4]; Igor Jovanovic[2]; Robert De Saro[4]; Milos Burger[2]; [1]University of Michigan; [2]University of Michigan; Gérard Mourou Center for Ultrafast Optical Science; [3]Argonne National Laboratory; [4]Energy Research Company

---

CERAMIC AND GLASS MATERIALS

Advances in Dielectric Materials and Electronic Devices — Dielectrics for Catalysis, Energy Harvesting, and Other Applications

Sponsored by: ACerS Electronics Division

Program Organizers: Amar Bhalla, University of Texas; Ruyan Guo, University of Texas at San Antonio; Rick Ubic, Boise State University; Matjaž Spreitzer, Jožef Stefan Institute; Tanmoy Maiti, IIT Kanpur

Tuesday AM | September 30, 2025
B142/143 | Convention Center

Session Chairs: Tanmoy Maiti, IIT Kanpur; Yang Bai, University of Oulu

---

9:00 AM Invited
Study of In Situ Doping of Diamond with Nitrogen and Silicon for Quantum Applications: Lakshmi Ramasubramanian[1]; *Raj Singh*[1]; [1]Oklahoma State University

9:20 AM
Atomistic Understanding of Reversible Electronic Transitions in Complex Oxides for Neuromorphic Computing: *Badri Narayanan*[1]; [1]University of Louisville

9:40 AM
DTAB-Functionalized MXene Nanofillers for Enhancing Dielectric Properties of TPU-Based Composites: *Yajing Liu*[1]; [1]Tsinghua University

10:00 AM Break

10:20 AM
Inductance of Stranded Metal Wires Stemming from Contacts Among the Strands: *Deborah Chung*[1]; Sruthi Krishnaswamy Narayanan[1]; [1]University at Buffalo, The State University of New York

10:40 AM
Low-Carbon Hydrogen Production via Water-Splitting-Driven by Piezoelectric and Pyroelectric Catalysis: Salma Touili[1]; Mimoun El Marssi[1]; Daoud Mezzane[2]; M'Barek Amjoud[2]; Mustapha Jouiad[1]; Buchra Asbani[1]; Hana Ursic[3]; Brigita Rozic[3]; *Zdravko Kutnjak*[3]; [1]University of Picardie Jules Verne; [2]Cadi Ayyad University; [3]Jozef Stefan Institute

11:00 AM
Performance of Praseodymium Copper Titanate (PCTO) Perovskites Processed in Flux for the Dielectric Energy Storage Ceramic: *Hanna Taye*[1]; Laxmi Hatte[1]; Ching H. Su[1]; Narasimha Prasad[1]; Bradley Arnold[1]; Fow-Sen Choa[1]; Brian Cullum[1]; Sundaram Singh[1]; Kamdeo Mandal[1]; Narsingh Singh[1]; [1]University of Maryland Baltimore County

11:20 AM
Synthesis, Characterization and Dielectric Property Measurements of Complex Perovskite Oxides: Anup Kumar[1]; *Tarun Veeramarchnani*[2]; N. Singh[2]; Kamdeo Mandal[1]; [1]Indian Institute of Technology (Banaras Hindu University) Varanasi; [2]University of Maryland and Baltimore County

11:40 AM
Harnessing and Quantifying A-Site Vacancies for Transparent Conductive Behavior in Correlated Perovskites: *Dhiya Srikanth*[1]; Joseph Petruska[1]; Matthew Furst[1]; Jon-Paul Maria[1]; Saeed Almishal[1]; [1]Pennsylvania State University

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Advances in Materials and Systems for a Hydrogen Economy — Hydrogen Fuel for Industrial Decarbonization and Advances in Energy Technologies - Material Issues

Sponsored by: ACerS Manufacturing Division, ACerS Refractory Ceramics Division

Program Organizers: Manoj Mahapatra, University of Alabama-Birmingham; James Hemrick, Oak Ridge National Laboratory; John Hardy, Pacific Northwest National Laboratory; Jorgen Rufner, Idaho National Laboratory

Tuesday AM | September 30, 2025
B246 | Convention Center

Session Chairs: Ganesh Balasubramanian, University of New Haven; ShinYoung Kang, Lawrecen Livermore National Laboratory; Julian Long, FAMU-FSU College of Engineering- Florida State University; Jorgen Rufner, Idaho National Laboratory

9:00 AM Invited
Role of Hydrogen in Iron and Steel Production: Hanna Breunig[1]; *Tanumoy Banerjee*[1]; [1]LBNL

9:30 AM
Initiatives in Steel Products to Achieve Carbon-Neutrality: *Kaori Kawano*[1]; [1]Nippon Steel Corporation

10:00 AM Break

10:20 AM
Evaluating Hydrogen Embrittlement Resistance in Line Pipe Steels Using Double Cantilever Beam Test: *Amrita Bag*[1]; Syed Alam[1]; Shaojie Chen[1]; David Sponseller[2]; Muhammad Rashid[1]; Muhammad Arafin[1]; [1]Evraz North America; [2]Omni Metals Laboratory Inc.

10:40 AM
Degradation of Stoichiometric and Non-Stoichiometric Mullites in Dry (Ar - 10% H2) and Humid Hydrogen (Ar - 10% H2-3% H2O) Environment: *Manoj Mahapatra*[1]; Rajat Ramteke[1]; James Hemrick[2]; [1]University of Alabama at Birmingham; [2]Oak Ridge National Laboratory

11:00 AM Invited
Computer Simulation for Hydrogen Reaction With Materials: *ShinYoung Kang*[1]; [1]Lawrence Livermore National Laboratory

11:30 AM Invited
Data-Enabled and Materials Computations for Designing Materials for a Hydrogen Economy: *Ganesh Balasubramanian*[1]; [1]University of New Haven

PROCESSING AND MANUFACTURING

Advances in Refractory High Entropy Alloys and Ceramics — Structures and Mechanical Properties

Sponsored by: TMS: Refractory Metals & Materials Committee, ACerS Basic Science Division

Program Organizers: Mingwei Zhang, University of California, Davis; Arezoo Zare, Washington State University; John Perepezko, University of Wisconsin-Madison; Bai Cui, University of Nebraska Lincoln

Tuesday AM | September 30, 2025
B232 | Convention Center

Session Chairs: Mingwei Zhang, University of California, Davis; Arezoo Zare, Washington State University

8:00 AM Invited
Commercial Alloys Through a High-Entropy Lens: *Daniel Miracle*[1]; Stéphane Gorsse[2]; [1]Air Force Research Laboratory; [2]University of Bordeaux, CNRS

8:30 AM Invited
Refractory High Entropy Alloys in Extreme Environments: *Sergey Tsurkan*[1]; Daniel Velazquez[1]; [1]Avalanche Energy Designs

9:00 AM Invited
On the Strength and Ductility of Refractory High Entropy Alloys: *Mingwei Zhang*[1]; Jacob Pustelnik[1]; Tamanna Zakia[1]; Ayeman Nahin[1]; Michael Lau[1]; [1]University of California, Davis

9:30 AM Invited
Mechanisms of Spall Failure in Niobium Subjected to High-Throughput Laser-Driven Micro-Flyer Impact: *Nicolo Della Ventura*[1]; Arezoo Zare[2]; Jacob Diamond[3]; Todd Hufnagel[3]; K.T. Ramesh[3]; Daniel Gianola[1]; [1]University of California, Santa Barbara; [2]Washington State University; [3]Johns Hopkins University

10:00 AM Break

10:20 AM Invited
Elastic and Plastic Behavior of Refractory Multi-Principal-Element Alloys: Rui Feng[1]; George Kim[2]; Dunji Yu[3]; Yan Chen[3]; Yongjie Hu[4]; Wei Chen[5]; Ke An[3]; *Peter Liaw*[6]; [1]National Energy Technology Laboratory; [2]Illinois Institute of Technology; [3]Oak Ridge National Laboratory; [4]Drexel University; [5]University at Buffalo; [6]University of Tennessee, Knoxville

10:50 AM Invited
Multi-Modal Characterization of the B2 Phase in the Ta-Re Binary System: *Bryan Crossman*[1]; Junxin Wang[1]; Loic Perrière[2]; Si Athena Chen[3]; Jean-Philippe Couzinié[2]; Maryam Ghazisaeidi[1]; Michael Mills[1]; [1]The Ohio State University; [2]East Paris Institute of Chemistry and Materials (ICMPE); [3]Oak Ridge National Laboratory

11:20 AM
Understanding Compositional and Structural Non-Uniformities in Refractory High Entropy Alloys: *Merbin John*[1]; Deepak Pillai[1]; Lin Li[2]; Feng Yan[2]; Liang Qi[3]; Yufeng Zheng[1]; [1]University of North Texas; [2]Arizona State University; [3]University of Michigan

LIGHTWEIGHT ALLOYS

Advances in Titanium Technology — Characterization of Phase Transformation Pathways

Sponsored by: TMS: Titanium Committee

Program Organizers: G. Babu Viswanathan, Ohio State University; Michael Mills, Ohio State University; Sriram Vijayan, Michigan Technological University; Abhishek Sharma, Worcester Polytechnic Institute; Soumya Nag, Oak Ridge National Laboratory; Thomas Broderick, Federal Aviation Administration; Simon Ringer, University of Sydney; Vasisht Venkatesh, Pratt & Whitney; Paraic O'Kelly, Ohio State University

Tuesday AM | September 30, 2025
C172 | Convention Center

Session Chair: Gopal Viswanathan, The Ohio State University

8:00 AM Keynote
Exploiting Principles of Physical Metallurgy for the Optimization of Processing of Titanium Alloys for Structural Applications: Brian Welk[1]; Gopal Viswanathan[1]; Paraic O'Kelly[1]; *Hamish Fraser*[1]; [1]The Ohio State University

8:30 AM Invited
Grain Boundary Precipitation Pathways in the Metastable -Titanium Ti-5Al-5Mo-5V-3Cr: *Stoichko Antonov*[1]; T.S. Prithiv[2]; Zachary Kloenne[3]; Saurabh Mohan Das[2]; Dian Li[4]; Yufeng Zheng[4]; Hamish Fraser[3]; Baptiste Gault[2]; [1]National Energy Technology Laboratory; [2]Max Plank Institute for Sustainable Materials; [3]The Ohio State University; [4]University of North Texas

8:50 AM
Hydrogen Promoted Ti3Al Precipitation in Ti-6Al-4V: Velile Vilane[1]; *Johan Westraadt*[2]; Robert Knutsen[3]; [1]Nelson Mandela University; [2]The Ohio State University; [3]University of Cape Town

9:10 AM
Microstructure and Residual Stress at Diffusion Bonded Interface Between Vanadium and Ti-6Al-4V: *Claire Adams*[1]; Bernard Gaskey[2]; John Carpenter[2]; David Field[1]; [1]Washington State University; [2]Los Alamos National Laboratory

9:30 AM
On the Variant Selections in (+) Titanium Alloys by In-Situ High Temperature X-Ray Texture Measurement: *Shibayan Roy*[1]; Saumya Gupta[1]; Arjun Mahato[1]; KV Mani Krishna[1]; [1]Indian Institute of Technology Kharagpur

9:50 AM Invited
Advances in Thermochemical Surface Engineering and Heat Treatment of Titanium Alloys: *Thomas Christiansen*[1]; [1]Worcester Polytechnic Institute

10:10 AM Break

10:30 AM Invited
Advancements in Titanium Microstructure Characterization: Integrating AI for Automated Complex Quantification: *John Sosa*[1]; [1]MIPAR Software

10:50 AM Invited
Development and Characterization of Titanium Alloys for Powder Metallurgy: *Brian Welk*[1]; Andrew Baker[2]; Nicole Hudak[1]; Paraic O'Kelly[1]; G. Babu Viswanathan[1]; Hamish Fraser[1]; [1]The Ohio State University; [2]Boeing Company

11:10 AM
Titanium Microstructure over 15 Orders of Magnitude from Atomic-Force to Polarized-Light Microscopy: *Brian Hoover*[1]; Cesar Ornelas-Rascon[1]; [1]Advanced Optical Technologies

11:30 AM
Solution Heat-Treatment of -Type Ti-Mo-Zr Alloy for Bio-Implant Applications: *Mukhethwa Netshia*[1]; [1]Mintek

ARTIFICIAL INTELLIGENCE

Autonomous Platforms for Designing and Understanding Materials — Autonomous Platforms for Designing and Understanding Materials

Sponsored by: TMS: Computational Materials Science and Engineering Committee

Program Organizers: Rama Vasudevan, Oak Ridge National Laboratory; Badri Narayanan, University of Louisville; Mathew Cherukara, Argonne National Laboratory; Emine Gulsoy, Northwestern University; Charudatta Phatak, Argonne National Laboratory

Tuesday AM | September 30, 2025
D282 | Convention Center

Session Chair: Badri Narayanan, University of Louisville

8:00 AM Invited
Self Driving Labs and and Digital Twins: *James Warren*[1]; [1]National Institute of Standards and Technology

8:20 AM Invited
Digital Laboratory with Modular Measurement System and Standardized Data Format: *Taro Hitosugi*[1]; [1]The University of Tokyo

8:40 AM Invited
Operating Autonomous Laboratories with AI Agents: *Aikaterini Vriza*[1]; Michael Prince[1]; Henry Chan[1]; Tao Zhou[1]; Matthew Cherukara[1]; [1]Argonne National Laboratory

9:00 AM Invited
From Deposition to Degradation of Thin Films and Devices Through Autonomous Experimentation: *Davi Febba*[1]; Stephen Schaefer[1]; Brooks Tellekamp[1]; William Callahan[1]; Andriy Zakutayev[1]; [1]National Renewable Energy Laboratory

9:20 AM
Knowledge Graphs for Chemical Synthesis: Using Historical Data for Querying and Semantic Reasoning: *Quynh Tran*[1]; Ethan Tobey[1]; Holly Schreiber[1]; Laura Bruckman[1]; Roger French[1]; [1]Case Western Reserve University

9:40 AM Invited
Materials Discovery Using Deep Microscopic Optics: Pronoy Das[1]; Sathwik Bharadwaj[1]; *Zubin Jacob*[1]; [1]Purdue University

10:00 AM Break

10:20 AM Invited
Ferroics Reimagined with Causal Machine Learning: *Ayana Ghosh*[1]; [1]Oak Ridge National Laboratory

10:40 AM Invited
Robust Reflection Set Matching for Online Phase Identification from X-Ray Diffraction Data: *Brian DeCost*[1]; Joseph Aroh[1]; Austin McDannald[1]; Howie Joress[1]; Fan Zhang[1]; [1]National Institute of Standards and Technology

11:00 AM
Towards Autonomous Imaging and Analysis of Magnetic Domains: *Charudatta Phatak*[1]; Hanu Arava[1]; Emine Gulsoy[2]; [1]Argonne National Laboratory; [2]Northwestern University

11:20 AM Invited
Sparse Sampling and Inpainting for High-Throughput Scanning Transmission Electron Microscopy: *Alex Robinson*[1]; Jack Wells[1]; Daniel Nicholls[1]; James Hainsworth[1]; Romanas Sonkinas[1]; Nigel Browning[2]; [1]SenseAI Innovations Ltd.; [2]University of Liverpool

NANOMATERIALS

Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials — 1D Nanostructures

Sponsored by: ACerS Basic Science Division, ACerS Electronics Division, ACerS Energy Materials and Systems Division, ACerS Engineering Ceramics Division

Program Organizers: Haitao Zhang, University of North Carolina at Charlotte; Gurpreet Singh, Kansas State University; Kathy Lu, University of Alabama Birmingham; Edward Gorzkowski, Naval Research Laboratory; Michael Naguib, Tulane University; Sanjay Mathur, University of Cologne; Wonmo Kang, Arizona State University; Babak Anasori, Purdue University; Oliver Diwald, Paris Lodron Universitaet Salzburg; Hyunjoo Choi, Kookmin University

Tuesday AM | September 30, 2025
B230 | Convention Center

Session Chairs: Gurpreet Singh, Kansas State University ; Haitao Zhang, University of North Carolina at Charlotte; Wonmo Kang, Arizona State University

9:00 AM Invited
Understanding the Structure of Nanomaterials Using Infrared Spectroscopy: *Thomas Folland*[1]; [1]The University of Iowa

9:30 AM Invited
Hierarchical Hybrid Nanostructures (HHN) for Next Generation Electrochemical Devices: Sanskar Shrestha[1]; Wenhu Wang[1]; *Sharmila Mukhopadhyay*[1]; [1]University of Maine

10:00 AM Break

10:20 AM
Controlled Growth of Tellurium Network Structures for Multi-Spectral Photodetector Applications: Ahmed Abdelazeez[1]; Yizhou Wang[1]; Wanseok Oh[1]; Michael Walter[1]; Thomas Schmedake[1]; Yong Zhang[1]; *Haitao Zhang*[1]; [1]University of North Carolina at Charlotte

10:40 AM
Lightweight Silver–Carbon Nanotube Fiber Conductors for High-Efficiency Power Transmission: *Qichen Fang*[1]; Han Tran[1]; Ayush Raut[1]; David Mast[1]; Vesselin Shanov[1]; [1]University of Cincinnati

11:00 AM
Engineered Silicon-Based Nanocomposites for Optical Filtering: *Mari-Therese Burton*[1]; David Lunking[1]; Ofure Osunbor[1]; Jiuk Byun[2]; Alexander Hyla[3]; Michael Sailor[2]; Aaron Henson[1]; [1]DEVCOM Army Research Laboratory; [2]University of California, San Diego; [3]Naval Surface Warfare Center Indian Head Division

11:20 AM
Nanofiber-Based Metastable TiO2 Phases for Efficient, Standalone Visible-Light Photocatalyst: *Mohammad Mahafuzur Rahaman*[1]; Fateh Mikaeili[1]; Pelagia-Irene (Perena) Gouma[1]; [1]The Ohio State University

11:40 AM
Controlled Synthesis of Hybrid ZnO@CdS Nanostructure for Efficient Sustainable Hydrogen Generation: *Asim Ali*[1]; Kyeong Tae Kang[1]; [1]Kyungpook National University

MATERIALS-ENVIRONMENT INTERACTIONS

Corrosion of Advanced Materials: Theory and Practice — Corrosion of Advanced Materials: Theory and Practice I

Sponsored by: TMS: Corrosion and Environmental Effects Committee

Program Organizers: Haozheng Qu, GE Global Research; Bai Cui, University of Nebraska Lincoln; Jie Lian, Rensselaer Polytechnic Institute; Karthikeyan Hariharan, Friedrich-Alexander-Universität Erlangen-Nürnberg

Tuesday AM | September 30, 2025
D180 | Convention Center

Session Chairs: Xiaolei Guo, Colorado School of Mines; Chaitanya Bhave , Idaho National Laboratory

8:00 AM Invited
Corrosion of Hybrid IN718/SS316L Alloy Produced Via Laser Powder Bed Fusion: *Xiaolei Guo*[1]; Hailong Dai[1]; Liyi Wang[2]; Wei Xiong[2]; Samuel Friedlein[1]; [1]Colorado School of Mines; [2]University of Pittsburgh

8:30 AM
Corrosion Behavior of Cu-30Ni Alloy Produced by Wire Arc Additive Manufacturing: *Xiaolei Guo*[1]; Hailong Dai[1]; Samuel Friedlein[1]; Joseph Kleindienst[1]; Jonah Klemm-Toole[1]; [1]Colorado School of Mines

8:50 AM
Assessing the Performance of Additively Manufactured Alloy 718 After Heat Treatment Optimized for Oil and Gas Applications: *Mark Stoudt*[1]; Maureen Williams[1]; Carelyn Campbell[1]; James Zuback[1]; Mark Yunovich[2]; [1]National Institute of Standards and Technology; [2]Shell Technology Center

9:10 AM
Effect of Aging on Hardness and Corrosion Resistance of WE43: *Nazli Buyukatak*[1]; [1]Bursa Technical University

9:30 AM Invited
Development of a CALPHAD-Informed Phase-Field Model for Fe-Ni-Cr Corrosion in Molten Salts Using MOOSE: *Chaitanya Bhave*[1]; Parikshit Bajpai[1]; Daniel Schwen[1]; Mauricio Tano Retamales[1]; Markus Piro[2]; Thompson Igunma[3]; [1]Idaho National Laboratory; [2]McMaster University; [3]University of Florida

10:00 AM Break

10:20 AM
Corrosion Behaviour of Directed Energy Deposited NiCoCr Alloy in Cryogenic Environments: *Adnan Khan*[1]; Thaer Syam[1]; Bilal Mansoor[1]; [1]Texas A&M University

10:40 AM
Unlocking the Potential of Structural Adhesives: Investigating Corrosion Resistance Through Innovative Design of Experiments (DOE): *Ming-Siao Hsiao*[1]; Ryan McCall[1]; Nicholas Huff[1]; [1]Sunstar Engineering Americas

MATERIALS-ENVIRONMENT INTERACTIONS

Corrosion, Protection and Damage Monitoring of Advanced Materials in Natural and Specific Environments — Development and Applications of Advanced Instrumentation, Characterization Techniques and Methods for Degradation Study

Sponsored by: ACerS Education and Professional Development Council, ACerS Energy Materials and Systems Division, TMS Energy Committee, TMS: Energy Conversion and Storage Committee, TMS: Corrosion and Environmental Effects Committee

Program Organizers: Xueyuan Zhang, Gamry Instruments; Guang-ling Song, Southern University of Science and Technology

Tuesday AM | September 30, 2025
D182 | Convention Center

Session Chairs: John Zhang, Gamry Instruments; Guang-ling Song, Southern University of Science and Technology

9:00 AM Keynote
Enhancing Corrosion Resistance of Aluminum Alloys Through AI and ML Modeling: *Maham Khalid*[1]; Farnaz Kaboudvand[1]; Nydia Assaf[1]; Vardaan Sahgal[1]; Jon Ruffley[2]; Brian McDermott[2]; [1]The Washington Institute for STEM; [2]Naval Nuclear Laboratory

9:30 AM Invited
Corrosion of Biomedical Implants Using EFM and Sinusoidal Signals: *Alyssa Kerr*[1]; Shashi Lalvani[2]; [1]Indian Hill High School; [2]Miami University

10:00 AM Break

10:20 AM
Application of EQCM in Investigating Iron Carbonate Formation and Surface Changes: *Kamila Turganova*[1]; Kushal Singla[1]; Sahithi Ayyagari[1]; Bruce Brown[1]; Hubert Perrot[2]; Srdjan Nesic[1]; [1]Ohio University; [2]Sorbonne Université

10:40 AM
Enhancing Copper Foil Manufacturing: Electrochemical Strategies for Monitoring the Corrosion of Electrode: Qingdong Li[1]; Ruiyu Ma[1]; Jiangbo Feng[2]; Baigang An[2]; Lina Wang[3]; *Shengxian Wang*[3]; Xueyuan Zhang[4]; [1]Institute of Corrosion Science and Technology; [2]University of Science and Technology Liaoning; [3]Nanjing Londian Wason New Energy Materials Industry Technology Research Institute Co., Ltd.; [4]Gamry Instruments

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Energy Materials for Sustainable Development — Battery and Storage III

Sponsored by: ACerS Energy Materials and Systems Division

Program Organizers: Sepideh Akhbarifar, The Catholic University of America -Vitreous State Lab; Jianhua Tong, Clemson University; Yang Bai, University of Oulu; Eva Hemmer, University of Ottawa; Charmayne Lonergan, Missouri University of Science and Technology; Armin Feldhoff, Leibniz University Hannover; Takayoshi Katase, Institute of Science Tokyo; Bed Poudel, Pennsylvania State University; Ekaterina Pomerantseva, Drexel University; Kai He, University of California, Irvine

Tuesday AM | September 30, 2025
B234 | Convention Center

Session Chairs: Ekaterina Pomerantseva, Drexel University; Kai He, University of California, Irvine

9:00 AM Invited
Nuclear Probes for Investigation of Energy Storage Materials: *Hillary Smith*[1]; Eric Novak[1]; [1]Swarthmore College

9:30 AM
Direct Monitoring of Electrochemical Current Distributions Between Individual Battery Particles Using Microelectrode Arrays: *Wonjoon Suk*[1]; Yiyang Li[1]; [1]University of Michigan

9:50 AM Invited
Study of Li and Na Ion Transport in Battery Materials with Machine Learning Interatomic Potentials: *Wei Lai*[1]; [1]Michigan State University

10:20 AM Break

10:40 AM Invited
Upcycling Spent Li-Ion Battery Cathodes Through Co/Ni Exchange in LiCoO2 Exfoliated Nanosheets: Hsin-Juei Wang[1]; *Candace Chan*[1]; [1]Arizona State University

11:10 AM Invited
Scalable Synthesis of Battery-Grade Lithium Iron Phosphate Using Low-Cost Iron Oxide Feedstocks: *Tianyu Zhu*[1]; [1]Clemson University

11:40 AM
Upcycling Polyethylene Waste Into Hybrid Graphitic Porous Carbon Materials Used in High-Performance Zinc-Ion Hybrid Capacitors: *Viet Hung Pham*[1]; Yuan Gao[1]; Ngoc Tien Huynh[1]; Yun-Yang Lee[1]; Ki-Joong Kim[1]; Congjun Wang[1]; Christopher Matranga[1]; [1]National Energy Technology Laboratory

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Energy Materials for Sustainable Development — Thermoelectrics III

Sponsored by: ACerS Energy Materials and Systems Division

Program Organizers: Sepideh Akhbarifar, The Catholic University of America -Vitreous State Lab; Jianhua Tong, Clemson University; Yang Bai, University of Oulu; Eva Hemmer, University of Ottawa; Charmayne Lonergan, Missouri University of Science and Technology; Armin Feldhoff, Leibniz University Hannover; Takayoshi Katase, Institute of Science Tokyo; Bed Poudel, Pennsylvania State University; Ekaterina Pomerantseva, Drexel University; Kai He, University of California, Irvine

Tuesday AM | September 30, 2025
B235 | Convention Center

Session Chairs: Takayoshi Katase, Institute of Science Tokyo; Bed Poudel, Pennsylvania State University

9:00 AM Invited
Strategies for Improving Efficiency and Performance in Thermoelectric Generators: *Bed Poudel*[1]; Shankar Kunwar[1]; Rabeya Smriti[1]; Subrata Ghosh[1]; Wenjie Li[1]; [1]Pennsylvania State University

9:30 AM
Design and Development of Segmented $Mg_3(Sb, Bi)_2$ -Based Thermoelectric Devices: *Jayachandran Babu*[1]; Raju Chetty[1]; Takao Mori[1]; [1]National Institute for Materials Science

9:50 AM
Investigation of Thermoelectric Performance of n-Type Mg_3Sb_2 at High Temperatures with Mg Excess Compositions: *Harish Subramania Iyer*[1]; Raju Chetty[1]; Jayachandran Babu[1]; Takao Mori[1]; [1]National Institute for Materials Science

10:10 AM Break

10:30 AM Invited
Maximizing Solid-State Cooling and Temperature Control Performance Using Distributed Transport Properties (DTP) Material Systems: *Doug Crane*[1]; Chris Caylor[1]; Lon Bell[1]; [1]DTP Thermoelectrics

11:00 AM Invited
Beyond Conventional Doping: Polarity Switching and Carrier Control in Sn-Based Chalcogenides: *Takayoshi Katase*[1]; [1]Institute of Science Tokyo

11:30 AM Invited
Binary Metallic Alloys for Energy Conversion and Cooling: *Mona Zebarjadi*[1]; Sourav Das[1]; [1]University of Virginia

CERAMIC AND GLASS MATERIALS

Glasses and Optical Materials: Challenges, Advances, and Applications — GOMD Alfred R. Cooper Award Session

Sponsored by: ACerS Glass and Optical Materials Division

Program Organizers: Morten Smedskjaer, Aalborg University; N. M. Anoop Krishnan, Indian Institute of Technology Delhi

Tuesday AM | September 30, 2025
B132 | Convention Center

Session Chair: Jose Marcial, Pacific Northwest National Laboratory

9:20 AM Invited
Glass Still Breaks: Understanding Crack Initiation and Growth: *Morten Smedskjaer*[1]; [1]Aalborg University

10:00 AM Break

10:20 AM Invited
Optimization of the Heat Treatment Protocol and Metrology of Ge-As-Pb-Se Glass: *Jake Klucinec*[1]; [1]University of Central Florida

10:40 AM Invited
Extending Electrochemical Impedance Spectroscopy Capabilities for Non-Arrhenius and Fast-Ion-Conduction Studies of Glassy-Solid-State-Electrolytes: *Chris Martin*[1]; [1]Iowa State University

11:00 AM Invited
Thermodynamic Properties of Pt-Cu-P Bulk Metallic Glasses: *Wuqian Zhang*[1]; [1]Swarthmore College

FUNDAMENTALS AND CHARACTERIZATION

Grain Boundaries, Interfaces, and Surfaces: Fundamental Structure-Property-Performance Relationships — Electronic and Mechanical Properties

Sponsored by: ACerS Basic Science Division

Program Organizers: Melissa Santala, Oregon State University; Catherine Bishop, University of Canterbury; Klaus van Benthem, The University of Alabama; Wayne Kaplan, Technion - Israel Institute of Technology

Tuesday AM | September 30, 2025
C161A | Convention Center

Session Chairs: Ming Tang, Rice University; Klaus van Benthem, The University of Alabama

9:00 AM
Local Multimodal Electro-Chemical-Structural Characterization of Solid-Electrolyte Grain Boundaries: *Sossina Haile*[1]; Xin Xu[2]; [1]Northwestern University; [2]Arizona State University

9:20 AM
Grain Boundary Segregation and Conductivity in 3YSZ: *Yan Wang*[1]; Cai Ling[1]; Aram Rezikyan[1]; Kimberley Work[1]; Tricia Harnas[1]; [1]Corning

9:40 AM
Phase Field Modeling of Microstructure-Dependent Effective Electrical Conductivity in Battery Electrodes: *Lenissongui Yeo*[1]; Jacob Bair[1]; [1]Oklahoma State University

10:00 AM Break

10:20 AM
An Analysis of Intergranular Fracture in Binary Refractory Alloys and the Influence of Segregation: *Samuel Wagers*[1]; Adib Samin[1]; [1]Air Force Institute of Technology

10:40 AM
Tuning Hardness and Fracture Toughness of SPS-Sintered $MgAl_2O_4$ + YSZ via Na Doping and Field-Assisted Microindentation: *Kavan Joshi*[1]; Ricardo Castro[1]; [1]Lehigh University

11:00 AM
Finding the 'Right' Boundary: Grain Boundary-Stress Fundamental Zones: *Fernando Daniel León Cázares*[1]; Coleman Alleman[1]; Andrew Polonsky[1]; [1]Sandia National Laboratories

11:20 AM
Polarization Behavior of Electrical Conductors and Its Dependence on the Microstructure: *Deborah Chung*[1]; [1]University at Buffalo, The State University of New York

11:40 AM Invited
Dislocation–Grain Boundary Interactions in Bi-Crystal and Polycrystalline Strontium Titanate: *Xufei Fang*[1]; Chukwudalu Okafor[1]; Atsutomo Nakamura[2]; [1]Karlsruhe Institute of Technology; [2]The University of Osaka

FUNDAMENTALS AND CHARACTERIZATION

High-Entropy Materials: Solid Solutions, Intermetallics, Ceramics, Functional Materials and Beyond VI — Data-Driven, Data Analysis, and Design

Sponsored by: TMS: Alloy Phases Committee, ACerS Basic Science Division

Program Organizers: Shuozhi Xu, University of Oklahoma; Yiquan Wu, Alfred University; Yu Zhong, Worcester Polytechnic Institute; Michael Gao, National Energy Technology Laboratory; Xingbo Liu, West Virginia University; Peter Liaw, University of Tennessee; Jian Luo, University of California, San Diego; Mitra Taheri, Johns Hopkins University; Amy Clarke, Los Alamos National Laboratory

Tuesday AM | September 30, 2025
C170 | Convention Center

Session Chairs: Jamieson Brechtl, Oak Ridge National Lab; Bin Ouyang, Florida State University

9:00 AM Invited
Microstructure-Aware Bayesian Design of High Entropy Alloy Materials: *Raymundo Arroyave*[1]; [1]Texas A&M University

9:30 AM Invited
Bridging Scales: A Deep Dive into Macroscopically Smooth Plastic Flow in Al-Containing High-Entropy Alloys: *Jamieson Brechtl*[1]; Rui Feng[2]; Peter Liaw[3]; Benoît Beausir[4]; Hafsa Jaber[4]; Tatiana Lebedkina[4]; Mikhail Lebyodkin[4]; [1]Oak Ridge National Laboratory; [2]National Energy Technology Laboratory; [3]University of Tennessee; [4]Université de Lorraine

10:00 AM Break

10:20 AM Invited
Atomistic Modeling of Defect Energetics and Plasticity in CoCrFeMnNi Using a Moment Tensor Potential: *Mashroor Nitol*[1]; Subah Mubassira[2]; Shuozhi Xu[2]; Saryu Fensin[1]; [1]Los Alamos National Laboratory; [2]University of Oklahoma

10:50 AM
Active Learning Driven Materials Discovery for Low Thermal Conductivity Rare-Earth Pyrochlore-Oxide: *Amiya Chowdhury*[1]; Acacio Rincon Romero[1]; Tanvir Hussain[1]; Grazziela Figueredo[1]; [1]University of Nottingham

11:10 AM Invited
High Entropy Materials for Renewable Energy: Unique Electrochemical Application, Specialized Database and Universal Predictor: *Bin Ouyang*[1]; [1]Florida State University

11:40 AM Invited
Assessing Thin Films as Predictors of Bulk Properties in High-Throughput Alloy Design: *Janith Wanni*[1]; Chanho Lee[2]; Deva Neelakandan[2]; Benjamin Derby[1]; Osman Atwani[3]; James Valdez[1]; Michael Gao[4]; Mikayla Obrist[1]; Gaskey Bernard[1]; Nan Li[1]; Saryu Fensin[1]; [1]Los Alamos National Lab; [2]Auburn University; [3]Pacific Northwest National Laboratory; [4]National Energy Technology Laboratory

12:10 PM
Completely Bypassing DFT Calculations via Graph Neural Networks for Vacancy Formation Energies in High Entropy Alloys: *Nathan Linton*[1]; Parampreet Singh[1]; Dilpuneet Aidhy[1]; [1]Clemson University

ARTIFICIAL INTELLIGENCE

Integrated Computational Materials Engineering for Physics-Based Machine Learning Models — Integrated Computational Materials Engineering for Physics-Based Machine Learning Models

Sponsored by: TMS: Integrated Computational Materials Engineering Committee

Program Organizers: William Frazier, Pacific Northwest National Laboratory; Zhengtao Gan, Arizona State University; Lei Li, Pacific Northwest National Laboratory; Yucheng Fu, Pacific Northwest National Laboratory; Philip Goins, US Army Research Laboratory

Tuesday AM | September 30, 2025
D283 | Convention Center

Session Chair: To Be Announced

8:00 AM
The Study of Iron Strontium Through Experiment, Simulation, and Data Science: *Philip Goins*[1]; [1]US Army Research Laboratory

8:20 AM
Understanding and Design of Metallic Alloys Guided by Integrated Phase-Field Simulations: *Yuhong Zhao*[1]; [1]North University of China; University of Science and Technology Beijing

8:40 AM
Ab Initio Prediction of the Magnetic Thermodynamics of LaCoO3 Pervoskite Based on the Zentropy Theory: *Songge Yang*[1]; Yu Zhong[1]; [1]Worcester Polytechnic Institute

9:00 AM
Accelerated Nuclear Materials Thermochemistry in MOOSE Through Surrogate Modeling: *Parikshit Bajpai*[1]; Andrew Kitterman[1]; Chaitanya Bhave[1]; Daniel Schwen[1]; [1]Idaho National Laboratory

9:20 AM
A GNN Based Finite Element Simulations Emulator: Application to Parameter Identification for Aluminum Alloy 6DR1: *Ossama Abou Ali Modad*[1]; Georges Ayoub[1]; [1]University of Michigan-Dearborn

9:40 AM
Bayesian Optimization of KWN Precipitation Model Parameters for Improved Predictive Performance: *Emre Cinkilic*[1]; Batuhan Dogdu[2]; Tomas Manik[1]; Bjorn Holmedal[1]; [1]Norwegian University of Science and Technology; [2]CMS Wheels

10:00 AM Break

10:20 AM
Thermal Response of Stochastically Modeled Mesoscale Metal Foam: *Ryan Griffith*[1]; Matthew Beck[1]; [1]University of Kentucky

10:40 AM
Fe-Based Alloy Design via Graph DNN Training and Inversion: *Vyacheslav Romanov*[1]; [1]DOE-NETL

11:00 AM
Atomistic and AI-Driven Insights Into Ferroelectric Switching in Hybrid
Improper Double Perovskite Oxides: *Gayathri Palanichamy*[1]; [1]SRMIST

PROCESSING AND MANUFACTURING

Lightweight Composites, Materials & Alloys — Microstructure and Processing

Sponsored by: TMS: Materials Characterization Committee

Program Organizers: Ramasis Goswami, Naval Research Laboratory; Tanjore Jayaraman, United States Air Force Academy; Ramachandra Canumalla, Weldaloy Specialty Forgings; Aashish Rohatgi, Pacific Northwest National Laboratory

Tuesday AM | September 30, 2025
B231 | Convention Center

Session Chair: Ramachandra Canumalla, Weldaloy Specialty Forgings

8:00 AM
Cast Composition to Wrought Part in Single Step Using SolidStir® Additive Manufacturing: *Kumar Kandasamy*[1]; Anurag Gumaste[1]; Pankaj Kulkarni[1]; Ravi Sankar Haridas[2]; Rajiv Mishra[2]; [1]Enabled Engineering; [2]University of North Texas

8:20 AM
Development and Application of Phosphate Glass Fiber-Reinforced Composites With Chopped and Continuous Fiber Architecture: *Iliass Daki*[1]; [1]FSBM

8:40 AM
Effects of Mn Addition and Cooling Rate on Solidification Microstructure of Al-Mg-Si Alloys: *Takeshi Kaneshita*[1]; Kakefumi Hashimoto[1]; [1]Resonac Corporation

9:00 AM
Effect of Solution Treat Temperatures on Grain Size of CuCrZr Alloy: *Robert Meyer*[1]; Conor McKinney[1]; Nathan Fleming[1]; Ben Schaus[1]; Ram Canumalla[1]; [1]Weldaloy Specialty Forgings

9:30 AM Invited
Bottom-Up Design and Fabrication of Thermoelectric Nanomaterials: *Kevin Anderson*[1]; Benjamin Greenberg[1]; Alan Jacobs[1]; James Wollmershauser[1]; Boris Feigelson[1]; [1]U.S. Naval Research Laboratory

10:00 AM Break

10:20 AM
Development of Al-Mg-Si Alloy Material and Process for Automotive Structures Based on Strip Casting of Al-Mg-Si Alloy Sheet: *Junyeong Jeong*[1]; Hyuckmin Kwon[1]; Seongguk Son[1]; Chang Yeol Yoo[1]; Youn il Jung[1]; Heon Kang[2]; [1]Hyundai Motor; [2]KITECH

10:50 AM
Effect of Fast Shot Speed on ESCs and Porosity in Non-Heat Treated Al-Si Alloy: *Saria Akhtar*[1]; Xiong Shoumei[1]; [1]Tsinghua University

---

CERAMIC AND GLASS MATERIALS

Manufacturing and Processing of Advanced Ceramic Materials — Advances in Ceramic Processing I: Sintering

Sponsored by: ACerS Manufacturing Division

Program Organizers: Bai Cui, University of Nebraska Lincoln; James Hemrick, Oak Ridge National Laboratory; Eric Faierson, Iowa State University; Keith DeCarlo, Blasch Precision Ceramics

Tuesday AM | September 30, 2025
B240/241 | Convention Center

Session Chairs: Jie Lian, Rensselaer Polytechnic Institute; Jorgen Rufner, Idaho National Laboratory

---

9:00 AM Invited
Manufacturing Ceramic Fuels With Controlled Microstructure by Field Assisted Sintering Technology for Nuclear Applications: *Jie Lian*[1]; [1]Rensselaer Polytechnic Institute

9:30 AM Invited
Advanced Processing of Functional Ceramics: From Powder to Product at California Nanotechnologies: Eric Eyerman[1]; *Christopher Melnyk*[1]; [1]California Nanotechnologies

10:00 AM Break

10:20 AM
Latest Capabilities in Hot Isostatic Pressing for Advanced Ceramic Materials: *Chad Beamer*[1]; Andrew Cassese[1]; Anders Magnusson[1]; [1]Quintus Technologies Llc

10:40 AM Invited
Effect of Microstructure on the Mechanical Properties of Reaction-Bonded SiC-B4C Composites: Dongwook Kim[1]; Hui Jung Kim[1]; *Young-Wook Kim*[1]; Woohyuk Choi[2]; Sungmin So[2]; [1]Worldex Industry & Trading Co., Ltd.; [2]Samyang Comtech Co., Ltd.

11:10 AM Invited
Data-Driven Electric Field Assisted Sintering for Complex 3D Printed Preforms and CTE Interface Engineering of High Temperature CMCs: *Jorgen Rufner*[1]; Andrew Gorman[1]; Arin Preston[1]; Xinchang Zhang[1]; Stephanie Pitts[1]; Victor Walker[1]; William Chuirazzi[1]; Michael Moorehead[1]; Mario Matos[1]; [1]Idaho National Laboratory

11:40 AM
Densification Behavior of Dispersed and Coagulated Microstructures Via Two-Step Sintering: *Emelia Enke*[1]; William Carty[1]; [1]New York State College of Ceramics at Alfred University

12:00 PM
Role of Hard Agglomerates on Defect Free Microstructures: *Emelia Enke*[1]; William Carty[1]; [1]New York State College of Ceramics at Alfred University

---

SPECIAL TOPICS

Materials and Manufacturing in Low Earth Orbit (and Beyond) — Manufacturing of Organics/Biomaterials in Low Earth Orbit

Sponsored by: TMS: Solidification Committee

Program Organizers: David Williams, Ohio State University; Alan Luo, Ohio State University; Glenn Daehn, Ohio State University; Antonio Ramirez, The Ohio State University; Boyd Panton, Ohio State University; Nathan Ames, Ohio State University; Ken Savin, REdwire Space; Jonathan Volk, Voyager Space

Tuesday AM | September 30, 2025
C161B | Convention Center

Session Chair: Jonathan Volk, Voyager Technologies

9:00 AM Introductory Comments

9:10 AM
Building Materials Research and Manufacturing Capabilities in Low Earth Orbit: *Jonathan Volk*[1]; [1]Voyager Technologies

9:30 AM
Beyond Microgravity: Considering Other Biomechanical Features of Organoids and Tissue Models for In-Space Biomedicine and Biomanufacturing: *Meenal Datta*[1]; [1]University of Notre Dame

9:50 AM
Towards On-Orbit Synthesis of Metal-Organic Frameworks: *Owen Ryan*[1]; Youngjun Kim[2]; Zhou Li[1]; Yaprak Ozbakir[2]; Hyo Jun Min[2]; Zahra Heussen[1]; Clint Luna[1]; Rachel Ormsby[3]; Christopher Scherzer[3]; Jessica Frick[1]; Carlo Carraro[2]; Roya Maboudian[2]; Debbie Senesky[1]; [1]Stanford University; [2]University Of California, Berkeley; [3]Redwire Space

10:10 AM Break

10:30 AM
Leveraging Microgravity to Produce Bacteriorhodopsin-Based Thin Films for Biohybrid Applications: *Nicole Wagner*[1]; [1]LambdaVision

10:50 AM
The Generation of Gold Nanospheres in the Microgravity Environment of Low Earth Orbit: *Molly Mulligan*[1]; Kenneth Savin[1]; [1]Redwire

11:10 AM Concluding Comments

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Materials for CO2 Sequestration — Materials for CO2 Sequestration

Sponsored by: ACerS Energy and Systems Division, ACerS Engineering Ceramics Division, ACerS Basic Science Division

Program Organizers: Waltraud Kriven, University of Illinois at Urbana-Champaign; Ana Carolina Trindade, University of Sao Paulo; Pozhhan Mokhtari, University of Illinois Urbana-Champaign

Tuesday AM | September 30, 2025
B244/245 | Convention Center

Session Chair: Waltraud Kriven, University of Illinois at Urbana-Champaign

9:00 AM
Design, Fabrication, Performance Optimization, and Testing of CO2 Absorber Systems: *Michael Halbig*[1]; Mrityunjay Singh[2]; Meelad Ranaiefar[1]; William Huddleston[3]; Christopher Brady[1]; Roy Sullivan[1]; Lyndsey McMillon-Brown[1]; [1]NASA Glenn Research Center; [2]Ohio Aerospace Institute; [3]HX5, LLC

9:20 AM
Geopolymer-Based Zeolite 4A Composites for Efficient and Cost-Effective CO_2 Sequestration: Pozhhan Mokhtari[1]; Phillip Sin[1]; Maja Wlodarczyk[1]; Prapassorn Numkiatsakul[1]; *Waltraud Kriven*[1]; [1]University of Illinois Urbana-Champaign

9:40 AM
Improving the Wettability of Plastic Packing During Operation: *Ted Parsons*[1]; [1]Brentwood Industries

10:00 AM Break

10:20 AM
Correlating Intermediate Species to Product Selectivity in Dry Reforming Methane (DRM) Reaction: *Ruigang Wang*[1]; Md Hossain[1]; [1]Michigan State University

10:40 AM
Carbonation of Steelmaking Slags Using Supercritical Carbon Dioxide for Process Optimization, Chemical Stability, and Heavy Metal Immobilization: *Samuel Findley*[1]; Jihye Kim[1]; Lawrence Cho[1]; May Martin[2]; Andrew Silfka[2]; Bikram Konar[3]; Greg Lehnoff[3]; [1]Colorado School of Mines; [2]National Institute of Standards and Technology Boulder; [3]EVRAZ NA

11:00 AM
Tunable Optical Fiber Gas Sensors Based on MOF@PDMS Composite Films: *Jahid Inam Chowdhury*[1]; Devika Mohan[1]; Tulika Khanikar[1]; Jeffrey T. Culp[2]; Yang-Duan Su[1]; Khurram Naeem[1]; Ruishu Wright[2]; Paul Richard Ohodnicki[1]; [1]University of Pittsburgh; [2]National Energy Technology (NETL)

11:20 AM
Optical Fiber-Based pH Sensing for Oceanographic Applications: *Devika Mohan*[1]; Tulika Khanikar[1]; Alexander Shumski[2]; Yang-Duan Su[1]; Jahid Chowdhury[1]; Khurram Naeem[1]; Ruishu Wright[2]; Paul Ohodnicki[1]; [1]University of Pittsburgh; [2]National Energy Technology Laboratory Support contractor

ARTIFICIAL INTELLIGENCE

Materials Informatics for Images and Multi-Dimensional Datasets — Materials Informatics for Images and Multi-Dimensional Datasets II

Sponsored by: ACerS Basic Science Division, ACerS Electronics Division

Program Organizers: Amanda Krause, Carnegie Mellon University; Daniel Ruscitto, GE Aerospace Research; Alp Sehirlioglu, Case Western Reserve University; Roger French, Case Western Reserve University; Erika Barcelos, Case Western Reserve University

Tuesday AM | September 30, 2025
B233 | Convention Center

Session Chair: Amanda Krause, Carnegie Mellon University

9:00 AM Invited
High Throughput Instrumented Indentation Techniques to Extract Bulk-Like Properties of Commercial Metal Alloys: *Stephen Taller*[1]; Geeta Kumari[1]; Erik Herbert[1]; [1]Oak Ridge National Laboratory

9:30 AM
Bidirectional Prediction of Microstructure–Property/Process Relationships in Advanced Structural Materials Using Deep Generative Models: *Xiaofan Zhang*[1]; Junya Inoue[1]; Satoshi Noguchi[2]; [1]The University of Tokyo; [2]JAMSTEC

9:50 AM
Graph-Based Materials Informatics for Fe-Based Alloy Modeling and Design: *Vyacheslav Romanov*[1]; [1]DOE-NETL

10:10 AM Break

10:30 AM Invited
Microstructure Representation With Foundational Vision Models for Efficient Learning of Microstructure--Property Relationships: Sheila Whitman[1]; *Marat Latypov*[1]; [1]University of Arizona

11:00 AM Invited
Parametrization of Phases, Symmetries and Defects Through Local Crystallography: *Alex Belianinov*[1]; [1]Sandia National Laboratories

11:30 AM
Smart E-Waste Sorting: Confidence-Aware Rare Earth and Hazardous Material Mapping via Hyperspectral Imaging: *Sambandh Bhusan Dhal*[1]; Prabhat Kumar Tripathy[1]; Miranda Kuns[1]; Edna Stella Cardenas[1]; Jeffrey Alan Lacey[1]; John Earl Aston[1]; [1]Idaho National Laboratory

NUCLEAR ENERGY

Metallic Nuclear Fuel Design, Fabrication and Characterization — Metallic Nuclear Fuel Design, Fabrication and Characterization I

Sponsored by: TMS: Materials Characterization Committee, TMS: Nuclear Materials Committee

Program Organizers: Ericmoore Jossou, Massachusetts Institute of Technology; Linu Malakkal, Idaho National Laboratory; Nana Ofori-Opoku, McMaster University; Anil Prasad, Canadian Nuclear Laboratories; Lingfeng He, North Carolina State University; Marat Khafizov, Ohio State University

Tuesday AM | September 30, 2025
D280 | Convention Center

Session Chairs: Anil Prasad, Canadian Nuclear Laboratories; Ericmoore Jossou, Massachusetts Institute of Technology; Anthony Harrup Gutiérrez, Massachusetts Institute of Technology; Zilong Hua, Idaho National Laboratory

8:00 AM Invited
Exploring the Complex Interplay Between Phases, Porosity, and Thermal Properties in Metallic Fuels: *Assel Aitkaliyeva*[1]; Mitchell Mika[1]; Allison Probert[1]; Mary Sevart[1]; Tiankai Yao[2]; Ethan Hisle[2]; Tsvetoslav Pavlov[2]; Cynthia Adkins[2]; Karen Wright[2]; Luca Capriotti[3]; [1]University of Florida; [2]Idaho National Laboratory; [3]SCK-CEN

8:30 AM
Nitinol as Surrogate for Laser Additive Manufacturing of Uranium-10 Zirconium Metallic Nuclear Fuel: Abhi Ghosh[1]; Reza Esmaeilizadeh[1]; *Anil Prasad*[1]; Gregory Hamilton[1]; Ike Dimayuga[1]; [1]Canadian Nuclear Laboratories

8:50 AM Invited
Multi-Scale Modeling of Wastage Layer Formation in Metallic Fuel Cladding: *Larry Aagesen*[1]; Jacob Hirschhorn[1]; Chao Jiang[1]; Geoffrey Beausoleil[1]; [1]Idaho National Laboratory

9:20 AM
Mitigating FCCI in Metallic Fuels: Evaluating Cladding Liners Using Multiscale Modeling: *Shehab Shousha*[1]; Benjamin Beeler[1]; Larry Aagesen[2]; Geoffrey Beausoleil II[2]; Nicole Rodriguez Perez[3]; Maria Okuniewski[3]; [1]North Carolina State University; [2]Idaho National Laboratory; [3]Purdue University

9:40 AM Invited
Metal Fuel Performance in Sodium Fast Reactors: Post-Irradiation Examination and Innovative Experiments: *Tiankai Yao*[1]; [1]Idaho National Laboratory

10:10 AM Break

10:30 AM Invited
Multiscale Fuel Performance Modeling of U-Mo Fuel for Research Reactors: *Benjamin Beeler*[1]; Bei Ye[2]; Shenyang Hu[3]; Yongfeng Zhang[4]; Maria Okuniewski[5]; Sourabh Kadambi[6]; Linu Malakkal[6]; Zhi-Gang Mei[2]; [1]North Carolina State University; [2]Argonne National Laboratory; [3]Pacific Northwest National Laboratory; [4]University of Wisconsin, Madison; [5]Purdue University; [6]Idaho National Laboratory

11:00 AM Invited
Perspectives on Accelerated Fuel Irradiation Testing in Uranium-Zirconium Alloys: *Maria Okuniewski*[1]; Nicole Rodríguez Pérez[1]; Morgan Smith[1]; Lily Alberts[1]; Geoffrey Beausoleil[2]; [1]Purdue University; [2]Idaho National Laboratory

11:30 AM
Refractory Systems in Uranium-Containing Alloys for High Temperature Metallic Fuel: *Malachi Nelson*[1]; Boone Beausoleil[1]; James Zillinger[1]; George Evans[1]; Brian Newell[1]; [1]Idaho National Laboratory

SPECIAL TOPICS

Navigating Career Pivots at the Mid-Career and Beyond — Navigating Career Pivots at the Mid-Career and Beyond

Sponsored by: TMS: Professional Development Committee

Program Organizers: Punnathat Bordeenithikasem, Machina Labs; Emily Kinser, Advanced Research Projects Agency-Energy (ARPA-E); Janelle Wharry, University of Illinois

Tuesday AM | September 30, 2025
C162B | Convention Center

Session Chair: To Be Announced

9:00 AM
Empowering Researchers: Insights on Career Development, Work-Life Choice, and Passion for Research at Resonac: *Yoshishige Okuno*[1]; [1]Resonac Corporation

9:20 AM
My 50-Year Journey in Science and Engineering: *Deborah Chung*[1]; [1]University at Buffalo, The State University of New York

9:40 AM
So, You Think You Want to Be an Entrepreneur: *Sarah Jordan*[1]; [1]Skuld LLC, Worcester Polytechnic Institute

10:00 AM Break

10:20 AM Panel Discussion - Panelist include: Keith Bowman, University of Maryland Baltimore County; Chelsey Hargather, Los Alamos National Laboratory; and Paul Pritchard, Oak Ridge National Laboratory.

IRON AND STEEL (FERROUS ALLOYS)

New Frontiers in Physical Metallurgy of Steels — New Frontiers in Physical Metallurgy of Steels I

Sponsored by: AIST Metallurgy—Processing, Products and Applications Technology Committee

Program Organizers: Badirujjaman Syed, Arcelormittal Global Research And Development; Maedeh Pourmajidian, Arcelormittal Global R&D - East Chicago

Tuesday AM | September 30, 2025
D281 | Convention Center

Session Chairs: Badirujjaman Syed, ArcelorMittal Global R&D - East Chicago; Maedeh Pourmajidian, ArcelorMittal Global R&D - East Chicago

9:00 AM
Influence of Isothermal Hold Times on the Microstructure and Mechanical Properties During the Quenched and Partitioning Process for Medium Carbon Steel: Miranda Bell[1]; *Adira Balzac*[1]; Kip Findley[1]; John Speer[1]; [1]Colorado School of Mines

9:20 AM
Synergistic Effects of Cold Rolling and Quenching on the Microstructure and Mechanical Performance of Interstitial Free (IF) Steel: *Sandeep Yadav*[1]; Sadhan Ghosh[1]; [1]Indian Institute of Technology Roorkee

BIOMATERIALS

Next Generation Biomaterials — Next Generation Biomaterials III

Sponsored by: ACerS Bioceramics Division, TMS: Biomaterials Committee

Program Organizers: Roger Narayan, University of North Carolina; Tanveer Tabish, University of Oxford

Tuesday AM | September 30, 2025
C171 | Convention Center

Session Chairs: Muhammad Rizwan, University of Texas Southwestern Medical Center; Masanori Kikuchi, National Institute for Materials Science

9:00 AM Keynote
Invention, Evolution and Growth of Manufacturing by Pressure Spinning for Healthcare: *Mohan Edirisinghe*[1]; Mehmet Aydogdu[1]; [1]University College London

9:20 AM
Computer-Aided Engineering (CAE) for Tissue Engineering: *Min Wang*[1]; [1]University of Hong Kong

9:40 AM Invited
Material Driven Approaches to Improve Soft Tissue Regeneration: *Muhammad Rizwan*[1]; [1]University of Texas Southwestern Medical Center

10:00 AM Break

10:20 AM
Influence of Hydroxyapatite Nanocrystal Containing Substances on Deoxyribonucleic Acid Extraction: *Masanori Kikuchi*[1]; Suthir Prabakaran[1]; [1]National Institute for Materials Science

10:40 AM
Surface Modified Additively Manufactured Titanium for Orthopedic and Dental Applications: *Susmita Bose*[1]; Amit Bandyopadhyay[1]; [1]Washington State University

11:00 AM
4D Bioprinting of Biomimetic Trilayer Scaffolds for Uterine Tissue Regeneration: Shangsi Chen[1]; Liwu Zheng[1]; *Min Wang*[1]; [1]University of Hong Kong

IRON AND STEEL (FERROUS ALLOYS)

Steels for Sustainable Development IV — Development of Steels with Enhanced Mechanical Properties for Sustainable Applications

Sponsored by: TMS: Steels Committee, AIST Metallurgy—Processing, Products and Applications Technology Committee

Program Organizers: Joshua Mueller, Michigan Technological University; Adriana Eres-Castellanos, Los Alamos National Laboratory; Jonah Klemm-Toole, Colorado School of Mines; Colin Stewart, US Naval Research Laboratory; Pello Uranga, CEIT-BRTA; Jeongho Han, Hanyang University; Ian Zuazo, ArcelorMittal Global R&D - Industeel; Hyunseok Oh, University of Wisconsin - Madison; Alexandra Glover, Michigan Technological University

Tuesday AM | September 30, 2025
D181 | Convention Center

Session Chairs: Joshua Mueller, Michigan Technological University; Hyunseok Oh, University of Wisconsin-Madison; Jeongho Han, Hanyang University

8:00 AM Introductory Comments

8:05 AM Invited
Evaluating Cooling Rate Effects on the Microstructure and Mechanical Properties of High Performance 10Ni QLT Steel: *Melissa Thrun*[1]; Virginia Euser[1]; Alexandra Glover[2]; Joshua Mueller[2]; Caleb Minasian[2]; Evan Stafford[2]; Sven Vogel[1]; Bjorn Clausen[1]; Daniel Savage[1]; [1]Los Alamos National Laboratory; [2]Michigan Technological University

8:45 AM
Crack Propagation in a Martensitic/Austenitic Stainless-Steel Composite With a High Combination of Strength and Toughness: *Edouard de Sonis*[1]; [1]Université Catholique de Louvain

9:15 AM
Toughness Response of Ni-Mo Alloyed Heavy Gauge Plates to Quenching and Tempering Conditions: Xabier Azpeitia[1]; Unai Mayo[1]; Nerea Isasti[1]; Eric Detemple[2]; Hardy Mohrbacher[3]; *Pello Uranga*[1]; [1]CEIT and University of Navarra-Tecnun; [2]Aktien-Gesellschaft der Dillinger Hüttenwerke; [3]NiobelCon BV

9:45 AM
1.8 GPa Class Steel Sheet With the Elongated Pearlite Similarly Observed in Music Wire: *Rintaro Ueji*[1]; Hidetoshi Somekawa[1]; Akinobu Shibata[1]; Tsubasa Tokuzumi[1]; [1]National Institute for Materials Science

10:15 AM Break

10:35 AM
Enhanced Austenite Stability and Ductility by Isothermal Heat Treatment of the 3Mn TRIP Steel With Bimodal Grain Structure: *Yong Su Lim*[1]; Jin Kyung Kim[1]; [1]Hanyang University

11:05 AM
A Deep Dive into Dry Sliding Wear Behaviour of Low Carbon Steels: *Kapil Dev Sharma*[1]; Anish Karmakar[1]; [1]Indian Institute of Technology, Roorkee

SPECIAL TOPICS

TMS Frontiers of Materials Award Symposium: Harnessing Charged and Chemical Defects for Exceptional Structural and Functional Properties — TMS Frontiers of Materials Award Symposium I

Sponsored by: TMS: Nanomechanical Materials Behavior Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizer: Yu Zou, University of Toronto

Tuesday AM | September 30, 2025
C162A | Convention Center

Session Chair: Yu Zou, University of Toronto

8:00 AM Invited
Nanoscale Evaluation of Light Illumination Effect on Dislocation Behavior in III-V Group Semiconductors by Photoindentation: *Ryosuke Kinoshita*[1]; Yan Li[1]; Hiroto Oguri[1]; Eita Tochigi[2]; Atsutomo Nakamura[1]; [1]University of Osaka; [2]University of Tokyo

8:30 AM Invited
Electric Fields Effects on Microstructural Evolution: *Jian Luo*[1]; Jingjing Yang[1]; Keqi Song[1]; [1]University of California, San Diego

9:00 AM Invited
Dislocation Induced Plasticity in Ceramics: *Xinghang Zhang*[1]; Chao Shen[1]; Huan Li[1]; R. Edwin García[1]; Haiyan Wang[1]; [1]Purdue University

9:30 AM Invited
Defect Chemistry Regulated Dislocation Plasticity Across the Length Scale in SrTiO3: *Xufei Fang*[1]; Chukwudalu Okafor[1]; Atsutomo Nakamura[2]; [1]Karlsruhe Institute of Technology; [2]University of Osaka

10:00 AM Break

10:20 AM Keynote
Charged Dislocations, Electroplasticity and Photoplasticity in Ionic Crystals and Semiconductors: *Yu Zou*[1]; [1]University of Toronto

10:50 AM Invited
Investigation of Grain Boundary Segregation in Ceramic Materials Using Advanced Electron Microscopy: *Bin Feng*[1]; Naoya Shibata[1]; Yuichi Ikuhara[1]; [1]University of Tokyo

11:20 AM Invited
Dynamics of Dislocations and Grain Boundaries in Oxides: *Yuichi Ikuhara*[1]; [1]University of Tokyo/Tohoku University/JFCC

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

17th Symposium on Green and Sustainable Technologies for Materials Manufacturing and Processing — Green and Sustainable Technologies for Manufacturing Materials III

Sponsored by: ACerS Engineering Ceramics Division

Program Organizers: Surojit Gupta, University of North Dakota; Mrityunjay Singh, NASA; Tatsuki Ohji, National Institute of Advanced Industrial Science and Technology; Hisayuki Suematsu, Nagaoka University of Technololgy; Enrico Bernardo, University of Padova; Rajiv Asthana, University of Wisconsin; Yiquan Wu, Alfred University; Wei Ji, Wuhan University of Technology

Tuesday PM | September 30, 2025
B240/241 | Convention Center

Session Chairs: Surojit Gupta, University of North Dakota; Meelad Ranaiefar, NASA Glenn Research Center

2:00 PM Invited
Sustainable Biomimetic Corrosion Protection coatings for Steel Infrastructure: *Kalpana Katti*[1]; Dinesh Katti[1]; Ying Huang[1]; Dawei Zhang[1]; Hanmant Gaikwad[1]; Pooyan Vahidi Pashaki[1]; [1]North Dakota State University

2:30 PM Invited
Manufacture and Mechanical Performance of Bio-Based Thermoplastic Composites for Advanced Air Mobility Vehicles: *Meelad Ranaiefar*[1]; Allison Christy[1]; Sandi Miller[1]; Joseph Pinakidis[1]; [1]NASA Glenn Research Center

3:00 PM
Characterization, Processing, and Additive Manufacturing of Indigenous Materials From the Black Hills: *Bayler Larson*[1]; Brayden Sanderson[1]; Katrina Donovan[1]; Jon Kellar[1]; [1]South Dakota School of Mines and Technology

3:20 PM Break

3:40 PM
On Machining Using Nanofluid Based Minimum Quantity Lubricant: Stability and Tool Wear Analysis: *Amir Haroun*[1]; Amal Esawi[1]; Hossam Kishawy[2]; Hussien Hegab[3]; [1]American University in Cairo; [2]Ontario Tech University; [3]University of Guelph

4:00 PM
Ionothermal Synthesis of Sugarcane Bagasse-Derived Activated Carbons for Li-/Na- Ion Batteries: *Cyril Ehi-Eromosele*[1]; Samuel Ajayi[2]; [1]Covenant University; [2]University of South Africa - Florida Campus

4:20 PM
Experimental Study on Coal-Based Hydrogen Metallurgy Rotary Kiln Process for Copper Tailings: *Feng Luxing*[1]; [1]SaiNengJie High-Tech Co., Ltd.

SPECIAL TOPICS

ACerS Frontiers of Science and Society: The Rustum Roy Lecture — ACerS Frontiers of Science and Society: The Rustum Roy Lecture

Sponsored by: ACerS

Tuesday PM | September 30, 2025
B131 | Convention Center

Session Chair: Subhash Risbud, University of California

1:00 PM Invited
Toward Sustainable and High-Energy Lithium Batteries: Materials and Manufacturing at the Energy Frontier: *Ungyu Paik*[1]; [1]Hanyang University

ADDITIVE MANUFACTURING

Additive Manufacturing Modeling, Simulation, and Machine Learning: Microstructure, Mechanics, and Process — AM Modeling - Artificial Intelligence and Machine Learning (AI/ML)

Sponsored by: TMS: Additive Manufacturing Committee, TMS: Integrated Computational Materials Engineering Committee

Program Organizers: Jing Zhang, Purdue University; Li Ma, Johns Hopkins Applied Physics Laboratory; Charles Fisher, Office Of Naval Research; Brandon McWilliams, US Army Research Laboratory; Yeon-Gil Jung, Korea Institute of Ceramic Engineering & Technology

Tuesday PM | September 30, 2025
C150 | Convention Center

Session Chairs: Charles Fisher, NSWC Carderock Division; Li Ma, Johns Hopkins University Applied Physics Laboratory; Jing Zhang, Purdue University

2:00 PM
Neural Network-Based Optimization of Stepover Distance for Wire-Arc Additive Manufacturing: *Rida Adhami*[1]; Kaue Riffel[1]; Rakhi Bawa[1]; Justin Chan[1]; Daniil Gofman[1]; Antonio Ramirez[1]; [1]The Ohio State University

2:20 PM
Prediction Optimal Parameters for Wire-ARC DED Welding Using Multilayer-Perceptron Trained on Synthetic Data: *Daniil Gofman*[1]; Antonio Ramirez[1]; [1]The Ohio State University

2:40 PM
Shallow Neural Network Informed Dwell Time Selection for Thermal History Control in Laser Hot Wire Thin-Walled Parts: *Logan-Samuel Maurer*[1]; Jack Beuth[1]; [1]Carnegie Mellon University

3:00 PM
Machine Learning-Aided Optimization for Laser-Based AM: Poweder Selection: *Yu Zou*[1]; [1]University of Toronto

3:20 PM Break

3:40 PM
Developing a Digital Twin for Metals Additive Manufacturing: *Anthony Rollett*[1]; Somnath Ghosh[2]; [1]Carnegie Mellon University; [2]Johns Hopkins University

4:00 PM
Probabilistic Metrics for Validation of Grain Growth Models: *Arulmurugan Senthilnathan*[1]; Pranav Karve[1]; Sankaran Mahadevan[1]; [1]Vanderbilt University

4:20 PM
LLMs for Automated Data Extraction: A Case Study on AI's Applications to Accelerate Meta Analysis for Cold Spraying: *Stephen Price*[1]; James Saal[2]; Marco Musto[2]; Kyle Tsaknopoulos[1]; Kenneth Kroelein[2]; Danielle Cote[1]; [1]Worcester Polytechnic Institute; [2]Citrine Informatics

4:40 PM
Comparative Analysis of Data Augmentation Strategies for Defect Classification in Fused Deposition Modelling Additive Manufacturing Using VGG-16: Tejaswini Bhosale[1]; *Sudarshan Sanap*[1]; Mayur Sawant[1]; [1]MIT Art, Design & Technology University

ADDITIVE MANUFACTURING

Additive Manufacturing of Ceramic-Based Materials: Process Development, Materials, Process Optimization and Applications — Ceramic Vat Photopolymerization Processes

Sponsored by: ACerS Basic Science Division, ACerS Engineering Ceramics Division, ACerS Manufacturing Division

Program Organizers: Xuan Song, University of Iowa; Lei Chen, University of Michigan-Dearborn; Yiquan Wu, Alfred University; Paolo Colombo, University of Padova; Rajendra Bordia, Clemson University; Long-Qing Chen, Pennsylvania State University

Tuesday PM | September 30, 2025
C161A | Convention Center

Session Chairs: Sadaf Sobhani, Cornell University; Saptarshi Mukherjee, Idaho National Laboratory

2:00 PM Invited
Understanding Slurry Degradation in Digital Light Processing of High Refractive Index Ceramics: *Sadaf Sobhani*[1]; [1]Cornell University

2:30 PM
Versatile Ceramic Slurry Formulations for Photopolymerization-Based Additive Manufacturing: *Jošt Oblak*[1]; Jakob König[1]; Matjaž Spreitzer[1]; [1]Jozef Stefan Institute

2:50 PM
Influence of Compositional and Structural Design on the Quasi-Static and Dynamic Performance of Additively Manufactured Silica-Based Ceramics: *Jihyeon Kim*[1]; Yohann Scaringella[2]; Arthur Charrue[2]; Dana Dattelbaum[1]; Philippe Belleville[2]; Kwan-Soo Lee[1]; [1]Los Alamos National Laboratory; [2]CEA

3:10 PM
Engineering the Physicochemical Characteristics of Additively Manufactured Ceramics: *Kim Cuc Trinh*[1]; Jihyeon Kim[1]; Ryan P. Wilkerson[1]; Kwan-Soo Lee[1]; [1]Los Alamos National Laboratory

3:30 PM Break

3:50 PM
Three-Dimensional Printing of Hierarchically Porous Ceramics for Multifunctional Applications: *Ziyong Li*[1]; Giancarlo D'Orazio[1]; Sadaf Sobhani[1]; [1]Cornell University

4:10 PM Invited
Towards Microwave Volumetric Additive Manufacturing for Ceramics: Beamforming Experiments: *Saptarshi Mukherjee*[1]; Ethan Rosenberg[1]; Johanna Vandenbrande[1]; Johanna Schwartz[1]; Emeraldo Baluyot[1]; Maxim Shusteff[1]; James Kelly[1]; Joseph Tringe[1]; Corey DeChant[2]; Casey Icenhour[2]; Donna Guillen[2]; Nelson Bell[3]; Kevin Srtrong[3]; [1]Lawrence Livermore National Laboratory; [2]Idaho National Laboratory; [3]Sandia National Laboratories

4:40 PM Invited
Multiphysics Modeling of Volumetric Additive Manufacturing with Microwave Beamforming for Ceramic 3D Printing: Corey DeChant[1]; Ethan Rosenberg[2]; Johanna Vandenbrande[2]; *Donna Guillen*[1]; Casey Icenhour[1]; Saptarshi Mukherjee[2]; [1]Idaho National Laboratory; [2]Lawrence Livermore National Laboratory

5:10 PM
Photonic Curing of Chemically Bonded Phosphate Ceramics (CBPC) via Flash Lamp Annealing and the Effect of Optical Absorbers on the Reaction Kinetics and Microstructure: *Eren Ozmen*[1]; Mark D. Losego[1]; [1]Georgia Institute of Technology

5:30 PM
Metal Elements Doped Negative Poisson's Ratio Based Structural SiOC Polymer-Derived Ceramic to Activate Efficient Pressure and High-Temperature Difunctional Detection Performance: *Taotao Hu*[1]; Feibin Wei[1]; [1]Northwestern Polytechnical University

---

ADDITIVE MANUFACTURING

Additive Manufacturing, Directed Energy Deposition of Metals: Processing – Microstructure – Mechanical Property Relationships — Steels / Titanium and High Entropy Alloys

Sponsored by: TMS: Additive Manufacturing Committee

Program Organizers: Jonah Klemm-Toole, Colorado School of Mines; Joy Gockel, Colorado School of Mines

Tuesday PM | September 30, 2025
C160B | Convention Center

Session Chairs: Jonah Klemm-Toole, Colorado School of Mines; Joy Gockel, Colorado School of Mines

---

2:00 PM
Microstructural and Mechanical Investigation of High Strength Steel Replacements Fabricated via Wire-Arc Directed Energy Deposition (DED): *Jason Langevin*[1]; Kyle Tsaknopoulos[1]; Danielle Cote[1]; [1]Worcester Polytechnic Institute

2:20 PM
Microstructural Evolution of M250 Steel Fabricated via Laser Wire Directed Energy Deposition: *Ann Choi*[1]; Clinton Bettner[2]; Justin Warner[2]; Paul Lambert[2]; Bianca Piloseno[2]; Morgana Trexler[2]; Eddie Gienger[2]; [1]JHU/APL; [2]Johns Hopkins University

2:40 PM
The Response of 3D Printed AISI 5120 Steel to Heat Treatment: *Ipfi Mathoho*[1]; [1]CSIR Pretoria

3:00 PM
Investigation of Micro-Cracks in Additively Manufactured TiAl via EBSD.: *Collin Pickersgill*[1]; Zhaoying Ding[1]; Chenwei Shao[1]; Yu Zou[1]; [1]University of Toronto

3:20 PM Break

3:40 PM
Microstructural Differences in AlCoCrFeNi High-Entropy Alloys from Binder Jetting and Directed Energy Deposition: Jide Oyerinde[1]; *Ioannis Mastorakos*[1]; Ajit Achuthan[1]; Philip Yuya[1]; [1]Clarkson University

4:00 PM
Process-Structure-Property Relationship in LHW-DED Ti-6Al-4V: *Rajib Halder*[1]; Anthony Rollett[1]; [1]Carnegie Mellon University

4:20 PM
Process-Structure Relationships in Laser Directed Energy Deposition of Molybdenum Powder Within a Ti-6Al-4V Matrix: *Marwan Haddad*[1]; Mathew Cohen[1]; Aslan Bafahm Alamdari[1]; Brian Welk[1]; Kamel Fezzaa[2]; Sarah Wolff[1]; [1]Ohio State University; [2]Argonne National Laboratory

---

ADDITIVE MANUFACTURING

Additive Manufacturing: Design, Materials, Manufacturing, Challenges and Applications — Additive Manufacturing: Design, Materials, Manufacturing, Challenges and Applications - Session III

Sponsored by: ACerS Other

Program Organizers: Navin Manjooran, Solve; Gary Pickrell, Virginia Tech

Tuesday PM | September 30, 2025
C151 | Convention Center

Session Chairs: Gary Pickrell, Virginia Tech; Navin Manjooran, Solve

---

2:00 PM Introductory Comments

2:30 PM
Impact of Defects and Geometric Deviations on the Mechanical Performance of Laser Powder Bed Fusion Fabricated Plate-Lattice Structures: *Joseph Berthel*[1]; Jack Beuth[1]; Rahul Panat[1]; [1]Carnegie Mellon University

2:50 PM
Incorporating Residual Stress and Surface Condition in a Fracture Mechanics Based Criteria for Curvature of Additively Manufactured Parts: *Sushant Jha*[1]; Shamachary Sathish[1]; Nathan Bryant[1]; Hannah Moen-Vazquez[1]; Howard Sizek[2]; [1]University of Dayton Research Institute; [2]US Air Force Life Cycle Management Center

3:10 PM
Microstructural Characterization and Mechanical Behavior of Ti6Al4V After Hybrid Directed- Energy Deposition (DED) - Wrought Processing: *Ananth Balasubramanian*[1]; Ayobami Oladipo[1]; Eric Payton[1]; [1]University of Cincinnati

3:30 PM Break

3:40 PM
Process Parameter Control of Submicron Particle During Immiscible Alloy Rapid Solidification via LPBF: *Fanyue Kong*[1]; Ji Ma[1]; [1]University of Virginia

4:00 PM
Role of Minor Composition Changes in Driving Uncertainty in the Mechanical Properties of AM Fabricated Materials: *Ian Wietecha-Reiman*[1]; Todd Palmer[1]; [1]Pennsylvania State University

4:20 PM
SolidStir® Additive Manufacturing for Structural Repair: *Anurag Gumaste*[1]; Pankaj Kulkarni[1]; Ravi Sankar Haridas[2]; Rajiv Mishra[2]; Kumar Kandasamy[1]; [1]Enabled Engineering; [2]University of North Texas

4:40 PM
A Comprehensive Characterization of Gradient Properties and Feasibility Mapping Across the Cr-Fe-Ni Ternary Alloy Space: *Levi Nusz*[1]; Eric Faierson[1]; Peter Collins[1]; [1]Iowa State University

5:00 PM
Accelerating Forging Process Through the Industrialization of Additively Manufactured Preforms: Process Selection, Testing, and Evaluation: *Sambhaji Kusekar*[1]; Tushar Borkar[1]; David Schwam[1]; [1]Cleveland State University

5:20 PM
Acoustic Energy Assisted Shaping and Joining Process of Metals for In-Space 3D Printing Applications: *M Faisal Riyad*[1]; Pu Han[1]; Keng Hsu[1]; [1]Arizona State University

ADDITIVE MANUFACTURING

Additive Manufacturing: Development of Powders — Bridging Lab Scale Innovation and Industrial Powder Needs

Sponsored by: TMS: Additive Manufacturing Committee

Program Organizers: Tim Horn, North Carolina State University; Ian McCue, Northwestern University; Gianna Valentino, University of Maryland; Iver Anderson, Iowa State University Ames Laboratory; Michael Kirka, Oak Ridge National Laboratory

Tuesday PM | September 30, 2025
C160A | Convention Center

Session Chairs: John Reidy, Northwestern University; Emre Tekoglu, North Carolina State University

2:00 PM Invited
The Art of Precision Atomization: Crafting Better Powders for Additive Manufacturing: *Jordan Tiarks*[1]; David Byrd[1]; Ross Anderson[1]; Trevor Riedemann[1]; Iver Anderson[1]; [1]Ames National Laboratory

2:40 PM
A Table-Top Gas Atomizer for Rapid Development of Novel Alloys: *Andrew Seltzman*[1]; Andrei-Alexandru Popa[2]; Mariabelle Azemar[1]; Mia Chen[1]; Kyle Williams[1]; [1]Massachusetts Institute of Technology; [2]University of Southern Denmark

3:00 PM
Gas Atomization and Processing of a Co-Cu Based Immiscible Alloy Feedstock: *Katherine Moody*[1]; Ben Labiner[1]; Bharat Gwalani[1]; Tim Horn[1]; Christopher Rock[1]; [1]North Carolina State University

3:20 PM Break

3:40 PM
Mechanonanosynthesis - Rapid Alloy Powder Development: *Edward Laitila*[1]; [1]Michigan Technological Unversity

4:00 PM
Use of Mechanical Alloying to Produce Metal Matrix Composite Powders for Additive Manufacturing: *Ethan Parsons*[1]; [1]MIT Lincoln Laboratory

4:20 PM
Microstructural Differences in Alloy 800H Processed Traditionally and Additively: *Benjamin Labiner*[1]; Emre Tekoglu[1]; Christopher Rock[1]; Timothy Horn[1]; [1]North Carolina State University

4:40 PM
Developing Figure of Merit for Feedstock Powders for Printable Inks Through AI-Based SEM Image Processing: *Simay Ozsoysal*[1]; Jonathan McNanna[1]; Mysha Momtaz[1]; Mirko Schoenitz[1]; Edward Dreizin[1]; [1]New Jersey Institute of Technology

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Advancements in Molten Salt/Metal Technology in Energy Applications: From Atoms to Plants — Molten Salt Corrosion, Electrochemistry, Synthesis, and Separations

Sponsored by: TMS: Nuclear Materials Committee

Program Organizers: Tae-sic Yoo, Idaho National Lab; Ruchi Gakhar, Idaho National Laboratory; Rocio Rodriguez Laguna, Idaho National Laboratory; Michael Simpson, University of Utah; Hojong Kim, Pennsylvania State University

Tuesday PM | September 30, 2025
B242/243 | Convention Center

Session Chairs: Michael Simpson, University of Utah; Hojong Kim, Penn State University

2:00 PM
Testing Reference Electrodes in FLiNaZr Molten Salt: *Padma Krishnakumar*[1]; Michael Simpson[1]; Michael Clegg[1]; Jim Steppan[2]; Tom Meaders[2]; Byron Millet[2]; [1]University of Utah; [2]HiFunda LLC

2:20 PM
A Computational Approach to Investigate the Role of Impurities on Corrosion Behavior in Molten Salt Reactors: *Soumya Bandyopadhyay*[1]; Michael Tonks[1]; [1]University of Florida

2:50 PM
Electrochemical Behavior of Oxygen-Evolving Precious Metal Anodes in Molten LiCl-Li2O Electrolyte: Md Ikram Khan[1]; *Hojong Kim*[1]; [1]Pennsylvania State University

3:20 PM
EuCl3 Mediated Corrosion of Ni and Ni-20Cr Model Alloy in LiCl-KCl Molten Salt: *Kaustubh Bawane*[1]; Yuxiang Peng[2]; Linu Malakkal[1]; Mario Matos[1]; William Phillips[1]; James Wishart[3]; Yu-chen Karen Chen-Wiegart[2]; Ruchi Gakhar[1]; [1]Idaho National Laboratory; [2]Stony Brook University; [3]Brookhaven National Laboratory

3:40 PM Break

3:55 PM
Towards the Development of an Inert Anode for Reprocessing of Used Nuclear Fuel: *Dev Chidambaram*[1]; [1]University of Nevada, Reno

4:25 PM
Novel Al/Ti-Modified Ni-Mo-W-Cr Alloys for High Temperature Structural Applications in Molten Chloride Fast Reactors: *Sonali Ravikumar*[1]; Naveen Kumar Nagaraja[1]; Boateng Twum Donkor[2]; Vishal Soni[1]; Vijay K Vasudevan[1]; Jie Song[3]; [1]University of North Texas; [2]University of Cincinnati; [3]Virginia Tech University

4:45 PM
Fuel Salt Synthesis for the Molten Chloride Reactor Experiment: Scale-Up, Operations, and Production Update: *William Phillips*[1]; Jacob Yingling[1]; Michael Woods[1]; Jonathon Wilcox[1]; Andrew Smith[1]; James King[1]; [1]Idaho National Laboratory

5:15 PM
Separation of Fission Products from High-Level Waste Salt via Melt-Crystallization: *Rocio Rodriguez Laguna*[1]; Tae-Sic Yoo[1]; Kevin Tolman[1]; Brian Newell[1]; Jacob Yingling[1]; Morgan Kropp[1]; Stephanie Castro Baldivieso[1]; [1]Idaho National Laboratory

5:35 PM
Beyond Proof of Concept: The Role of Lab Scale Pilots in Parallel to Commercial Operations: *Benjamin Dacus*[1]; Sean Robertson[1]; [1]Mantel Capture

---

IRON AND STEEL (FERROUS ALLOYS)

Advances and Challenges in Decarbonization of the Steel Industry — Advances and Challenges in Decarbonization of the Steel Industry

Sponsored by: AIST Metallurgy—Processing, Products and Applications Technology Committee

Program Organizers: Ashwin Kannan Iyengar, ArcelorMittal Calvert; Chad Cathcart; Ronald O'Malley, Missouri University of Science and Technology; Feng Liu, Hatch Ltd

Tuesday PM | September 30, 2025
D282 | Convention Center

Session Chair: Ashwin Kannan Iyengar, AM/NS Calvert LLC

2:00 PM Introductory Comments

2:20 PM
Practical Routes to Industrial Decarbonization in North American Integrated Iron and Steel Production: *Richard Hiernaux*[1]; Stuart Street[1]; Donald Zuke[1]; Roger Westcott[1]; John Hill[1]; [1]Cleveland-Cliffs

2:50 PM
The Effect of Iron Oxide Pellet Properties and Reducing Atmosphere on Gas Based Reduction of Commercial Grade Iron Oxide Pellets: Lysa Chizmadia[1]; Samuel Pennell[2]; *Brett Spigarelli*[1]; David Haugen[1]; [1]Natural Resources Research Institute; [2]National Renewable Energy Laboratory

3:20 PM Break

3:40 PM
Pellet Design for Hydrogen Reduction: *Petrus Pistorius*[1]; [1]Carnegie Mellon University

4:10 PM
A Percolation Model to Scale Sustainable Ironmaking for Low Emissions Steel: *Subhechchha Paul*[1]; Leora Dresselhaus-Marais[1]; Brinthan Kanesalingam[1]; Yan Ma[2]; Dierk Raabe[3]; Ilenia Battiato[1]; Julie Villanova[4]; Guillermo Requena[5]; Stanley Akpu[6]; [1]Stanford University; [2]TU Delft; [3]Max Planck Institute for Sustainable Materials; [4]European Synchrotron Radiation Facility (ESRF); [5]RWTH-Aachen University; [6]Nnamdi Azikiwe University

4:40 PM
Iron From Iron Ore by Chemical Comminution: *Edward Laitila*[1]; Donald Mikkola[1]; [1]Michigan Technological Unversity

---

CERAMIC AND GLASS MATERIALS

Advances in Dielectric Materials and Electronic Devices — Additive Manufacturing and Perovskite Photovoltaics

Sponsored by: ACerS Electronics Division

Program Organizers: Amar Bhalla, University of Texas; Ruyan Guo, University of Texas at San Antonio; Rick Ubic, Boise State University; Matjaž Spreitzer, Jožef Stefan Institute; Tanmoy Maiti, IIT Kanpur

Tuesday PM | September 30, 2025
B142/143 | Convention Center

Session Chairs: Matjaž Spreitzer, Jožef Stefan Institute; Luiz Cotica, State University of Maringa

---

2:00 PM
Current Pathways in Inkjet-Printed Metal Nanoparticle Films: COMSOL Analysis of Measurement Techniques: *Luis Santillan*[1]; William Flynn[1]; Ruyan Guo[1]; Amar Bhalla[1]; [1]University of Texas at San Antonio

2:20 PM
Exploring Functional Ink Materials and Process Evaluation of High-Precision Additive Manufacturing Inkjet Printing Technique: *Arashdeep Singh*[1]; Ahsan Mian[1]; [1]Wright State University

2:40 PM
Effects of Annealing Conditions and Temperatures on Sputtered NiOx Thin Films for Perovskite Solar Cell: Firdous Ali[1]; Saied Vaezsis[1]; Dawen Li[1]; *Subhadra Gupta*[1]; [1]University of Alabama

3:00 PM Invited
Enhancement of Bulk Photovoltaic Effect in Pb(Mg1/3Nb2/3)O3-PbTiO3 Single Crystals After Domain Structure Manipulation via AC Poling: *Yang Bai*[1]; [1]University of Oulu

3:20 PM Break

3:40 PM
Finite Element Analysis and Inkjet Printing Design of Magnetoelectric Coupling in CFO-BTO Composite System: *William Flynn*[1]; Sean Garnsey[1]; Luis Santillan[1]; Amar Bhalla[2]; Ruyan Guo[1]; [1]University of Texas at San Antonio; [2]University of Texas

4:00 PM
BCZT/PVDF as Ferroelectric Relaxors and Its Energy Storage Capabilities: *Amolak Sekhon*[1]; Navneet Dabra[2]; [1]Sekhon Physics Classes; [2]Mata Sahib Kaur Girls College

PROCESSING AND MANUFACTURING

Advances in Refractory High Entropy Alloys and Ceramics — High Entropy Ceramics

Sponsored by: TMS: Refractory Metals & Materials Committee, ACerS Basic Science Division

Program Organizers: Mingwei Zhang, University of California, Davis; Arezoo Zare, Washington State University; John Perepezko, University of Wisconsin-Madison; Bai Cui, University of Nebraska Lincoln

Tuesday PM | September 30, 2025
B232 | Convention Center

Session Chair: Zilong Hua, Idaho National Laboratory

2:00 PM Invited
Refractory High-Entropy Borides, Nanoalloys, and Dual-Phase Composites with a Broader Perspective: *Jian Luo*[1]; [1]University of California, San Diego

2:30 PM Invited
High-Entropy Oxides and Halides: Expanding the Energy-Materials Space: *Corey Oses*[1]; [1]Johns Hopkins University

3:00 PM Invited
Exploring the Thermodynamic Stability of the High Entropy Ultra-High Temperature Ceramic Composition Space (Ti,Zr,Hf,Nb,Ta)C_{1-x}: *Theresa Davey*[1]; Ying Chen[2]; [1]Bangor University; [2]Tohoku University

3:30 PM Break

3:50 PM Invited
Selective Laser Sintering and Spark Plasma Sintering of Compositionally Complex Carbide Ceramics: *Bai Cui*[1]; Lanh Trinh[1]; Xin Chen[1]; Luke Wadle[1]; Yongfeng Lu[1]; Zilong Hua[2]; Kaustubh Bawane[2]; Linu Malakkal[2]; Lingfeng He[3]; [1]University of Nebraska Lincoln; [2]Idaho National Laboratory; [3]North Carolina State University

4:20 PM Invited
Thermal Conductivity of High Entropy Ceramics Before and After Irradiation: *Zilong Hua*[1]; Kaustubh Bawane[1]; Linu Malakkal[1]; Lanh Trinh[2]; Xin Chen[2]; Luke Wadle[2]; Bai Cui[2]; Yongfeng Yu[2]; Lingfeng He[3]; [1]Idaho National Laboratory; [2]University of Nebraska Lincoln; [3]North Carolina State University

4:50 PM Invited
Microstructure, Micromechanical and Thermal Properties of Irradiated High Entropy Carbide Ceramics: *Kaustubh Bawane*[1]; Lanh Trinh[2]; Linu Malakkal[1]; Yongfeng Lu[2]; Lingfeng He[3]; Bai Cui[2]; [1]Idaho National Laboratory; [2]University of Nebraska Lincoln; [3]North Carolina State University

5:20 PM
Fundamental Property Measurements of Fully Dense (Cr,Mo,Ta,V,W) C_{1-x} High-Entropy Carbide Ceramic: *Ali Sarikhani*[1]; William Fahrenholtz[1]; Gregory Hilmas[1]; Yew San Hor[1]; [1]Missouri University of Science and Technology

LIGHTWEIGHT ALLOYS

Advances in Titanium Technology — Alloy Design & Material Discovery

Sponsored by: TMS: Titanium Committee

Program Organizers: G. Babu Viswanathan, Ohio State University; Michael Mills, Ohio State University; Sriram Vijayan, Michigan Technological University; Abhishek Sharma, Worcester Polytechnic Institute; Soumya Nag, Oak Ridge National Laboratory; Thomas Broderick, Federal Aviation Administration; Simon Ringer, University of Sydney; Vasisht Venkatesh, Pratt & Whitney; Paraic O'Kelly, Ohio State University

Tuesday PM | September 30, 2025
C172 | Convention Center

Session Chair: To Be Announced

2:00 PM Invited
Tailoring Titanium for Additive Manufacturing: *Kevin Sisco*[1]; Simon Ringer[1]; [1]University of Sydney

2:20 PM Invited
A New High-Temperature Titanium Alloy for Directed Energy Deposition: *Thomas Klein*[1]; Jose Neves[1]; David Obersteiner[2]; Michael Musi[2]; Ehsan Farabi[3]; Michael Lasisi[3]; Sophie Primig[3]; [1]LKR Light Metals Technologies Ranshofen; [2]Montanuniversität Leoben; [3]University of New South Wales

2:40 PM Invited
Industrial Perspectives on Titanium Research and Development Needs: *John Foltz*[1]; [1]ATI Specialty Materials

3:00 PM Invited
Advances in Designing and Manufacturing Gradient Ti-Based Alloys: Matt Dolde[1]; Erin Cleary[1]; *Peter Collins*[1]; [1]Iowa State University

3:20 PM Break

3:40 PM Invited
Decision Science-Driven Assessment of Titanium Alloys for Aircraft Landing Gear Beams: *Ramachandra Canumalla*[1]; Tanjore V. Jayaraman[2]; [1]Weldaloy Specialty Forgings; [2]United States Air Force Academy

4:00 PM Invited
Investigation of Processing-Structure-Property Relationships in Ti Alloys for Defense Application: *Soumya Nag*[1]; Brian Gibson[1]; Lisa Smith[1]; Alex Waters[1]; Jennifer Semple[2]; Brian Post[1]; Craig Blue[1]; [1]Oak Ridge National Laboratory; [2]Naval Surface Warfare Center

4:20 PM
A High Throughput Investigation of Al and Cr Additions to the Ti-Fe System via Diffusion Couple Technique, and the Oxidation Characteristics of a Microstructural Gradient: *Paraic O'Kelly*[1]; Clara Schlereth[2]; Gerald Schmidt[2]; Katharina Beck[2]; Mathias Galetz[2]; Alexander Knowles[3]; [1]The Ohio State University; [2]DECHEMA-Forschungsinstitut; [3]University of Birmingham

4:40 PM
Nanostructures in an Additively Manufactured Ti-5Al-5Mo-5V-3Cr Alloy: *Sydney Fields*[1]; Deepak Pillai[1]; Yiliang Liao[2]; Yufeng Zheng[1]; [1]University of North Texas; [2]Iowa State University

5:00 PM
Nanostructure-Mediated Phase Transformation and Deformation in Metastable Beta Titanium Alloys: Deepak Pillai[1]; Stoichko Antonov[2]; Hamish Fraser[3]; *Yufeng Zheng*[1]; [1]University of North Texas; [2]National Energy Technology Laboratory; [3]The Ohio State University

---

CERAMIC AND GLASS MATERIALS

American Ceramic Society Journal Awards Symposium — American Ceramic Society Journals Awards Symposium

Sponsored by: ACerS Other

Program Organizer: John Mauro, Pennsylvania State University

Tuesday PM | September 30, 2025
B130 | Convention Center

Session Chair: John Mauro, The Pennsylvania State University

2:00 PM
Engineering Grain Boundary Energy with Thermal Profiles to Control Grain Growth in SrTiO3: Vivekanand Muralikrishnan[1]; Jackson Langhout[2]; Daniel DeLellis[1]; Kristy Schepker[2]; *Amanda Krause*[1]; [1]Carnegie Mellon University; [2]University of Florida

2:20 PM
Fracture Anisotropy in Tantalum Carbide Ceramics: Sajjad Hossain[1]; Alyssa Stubbers[2]; Gregory Thompson[2]; *Christopher Weinberger*[1]; [1]Colorado State University; [2]University of Alabama

2:40 PM
High Strength Si-SiC Lattices Prepared by Powder Bed Fusion, Infiltration-Pyrolysis and Reactive Silicon Infiltration: Marco Pelanconi[1]; *Alberto Ortona*[1]; Paolo Colombo[2]; Dietmar Koch[3]; [1]University of Applied Sciences and Arts of Southern Switzerland; [2]University of Padua; [3]University of Augsburg

3:00 PM
Material Selection and Manufacturing for High-Temperature Heat Exchangers: A Ceramics Perspective: *Corson Cramer*[1]; [1]Oak Ridge National Laboratory

3:20 PM Break

3:40 PM
3D Printing of Ceramics: Advantages, Challenges, Applications, and Perspectives: *Susmita Bose*[1]; Amit Bandyopadhyay[1]; [1]Washington State University

4:00 PM
3D Printing of Fiber-Reinforced Ultra High-Temperature Ceramics via Paste Extrusion Technique: *Saqlain Zaman*[1]; Joseph Munoz[1]; Laura Molina[1]; Md Sahid Hassan[1]; Md Shahjahan Mahmud[1]; Joshua Dantzler[1]; Alexis Lopez[1]; Dominic Austen[1]; Evgeny Shafirovich[1]; Shadman Nabil[1]; Francisco Medina[1]; Nicholas Ku[2]; Lionel Gonzalez[2]; Yirong Lin[1]; [1]The University of Texas at El Paso; [2]DEVCOM Army Research Laboratory

4:20 PM
Slurry Material Extrusion of Chopped Carbon Fiber Reinforced Silicon Carbide Ceramic Matrix Composites (CMCs): *Rodney Trice*[1]; Jeffrey Youngblood[1]; Kyle Cox[1]; Tess Marconie[1]; Raina Shreiner Barger[1]; Karan Motwani[1]; [1]Purdue University

4:40 PM
Room-Temperature Plastic Deformation of Polycrystalline SrTiO3 Via Dislocations: *Chukwudalu Okafor*[1]; Kuan Ding[2]; Oliver Preuß[3]; Neamul Khansur[4]; Wolfgang Rheinheimer[5]; Xufei Fang[1]; [1]Karlsruhe Institute of Technology; [2]Max Planck Institute for Sustainable Materials; [3]Technical University of Darmstadt; [4]Case Western Reserve University; [5]University of Stuttgart

---

NANOMATERIALS

Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials — Nanocomposites & Hybrid Materials

Sponsored by: ACerS Basic Science Division, ACerS Electronics Division, ACerS Energy Materials and Systems Division, ACerS Engineering Ceramics Division

Program Organizers: Haitao Zhang, University of North Carolina at Charlotte; Gurpreet Singh, Kansas State University; Kathy Lu, University of Alabama Birmingham; Edward Gorzkowski, Naval Research Laboratory; Michael Naguib, Tulane University; Sanjay Mathur, University of Cologne; Wonmo Kang, Arizona State University; Babak Anasori, Purdue University; Oliver Diwald, Paris Lodron Universitaet Salzburg; Hyunjoo Choi, Kookmin University

Tuesday PM | September 30, 2025
B230 | Convention Center

Session Chairs: Kathy Lu, University of Alabama at Birmingham; Wonmo Kang, Arizona State University; Sanjay Mathur, University of Cologne

---

2:00 PM Invited
Multilayer 3D Printed Carbonaceous Structures with Hyperbranched Pre-Ceramic Polymeric Coatings: Arko Dasa[1]; Jordan Sinclair[1]; Garvit Nayyar[1]; Margaret Madsen[1]; Christina Birkel[1]; *Timothy Long*[1]; [1]Arizona State University

2:30 PM
Mechanical Characterization of Polymer Derived Ti3C2 MXene-SiC Ceramic: *Mohammad Hassan Shirani Bidabadi*[1]; Kathy Lu[1]; Wei Li[1]; [1]University of Alabama Birmingham

2:50 PM
High Temperature Phase Stability and Transformation of Polymer Derived Ti3C2 MXene-SiC Composites: *Srinivasa Kartik Nemani*[1]; Wei Li[1]; Brian Wyatt[2]; Kaustubh Bawane[3]; Babak Anasori[2]; Kathy Lu[1]; [1]University of Alabama at Birmingham; [2]Purdue University; [3]Idaho National Laboratory

3:10 PM
An Innovative Graphene-Metal Composite Conductor for Ultrahigh Temperatures: *Wonmo Kang*[1]; Won June Choi[1]; Chunghwan Kim[1]; [1]Arizona State University

3:30 PM Break

3:50 PM
Organic-Inorganic MXene Hybrid for High-Temperature Applications: *Krutarth Kamath*[1]; Aditi Akella[1]; Nithin Chandran BS[1]; Pratyush Chettri[1]; Anupma Thakur[1]; Brian Wyatt[1]; Babak Anasori[1]; [1]Purdue University

4:10 PM
Bifunctional TiO_x- and V_2O_5-Composite Nanofibers for Photo-Rechargeable Lithium-Ion Batteries: *Tom-Jonas Schneider*[1]; Sanjay Mathur[1]; Michael Wilhelm[1]; Ruth Adam[1]; Aman Bhardwaj[1]; Iuliia Neumann[1]; Sung Cho[2]; Yuki Yamada[2]; Tohru Sekino[2]; Jianming Tao[3]; Zhensheng Hong[3]; Thomas Fischer[1]; David Patrun[1]; [1]University of Cologne; [2]SANKEN, Institute of Scientific and Industrial Research; [3]Fujian Provincial Solar Energy Conversion and Energy Storage Engineering Technology Research Center

4:30 PM
Exploring Sn–Cu Mixed Perovskites: A Novel Approach to Lead-Free Photovoltaic Absorbers: *Ruth Adam*[1]; Sanjay Mathur[1]; Shahzada Ahmad[2]; Samrana Kazim[3]; Ashish Kulkarni[4]; Thomas Kirchartz[5]; Benjamin Klingebiel[5]; Luis Lezama[6]; [1]University of Cologne; [2]Basque Center for Materials Applications & Nanostructures UPV/EHU; [3]Materials Physics Centre-MPC (CSIC-UPV/EHU); [4]Indian Institute of Technology Tirupati ; [5]Forschungszentrum Jülich GmbH; [6]University of the Basque Country (UPV/EHU)

4:50 PM
YSZ-Bi Hybrid Thermal Barrier Coating for Aluminum: Charlotte Jaffe[1]; *Madeline Jones*[1]; Daniela da Fonseca[1]; Ricardo Castro[1]; [1]Lehigh University

MATERIALS-ENVIRONMENT INTERACTIONS

Corrosion of Advanced Materials: Theory and Practice — Corrosion of Advanced Materials: Theory and Practice II

Sponsored by: TMS: Corrosion and Environmental Effects Committee

Program Organizers: Haozheng Qu, GE Global Research; Bai Cui, University of Nebraska Lincoln; Jie Lian, Rensselaer Polytechnic Institute; Karthikeyan Hariharan, Friedrich-Alexander-Universität Erlangen-Nürnberg

Tuesday PM | September 30, 2025
D180 | Convention Center

Session Chairs: Bai Cui, University of Nebraska-Lincoln; Gabriel Plummer, NASA Ames Research Center

2:00 PM Invited
Atomistic Simulations of Early-Stage Oxidation Mechanisms in Oxide Dispersion Strengthened Alloys: *Gabriel Plummer*[1]; Mikhail Mendelev[1]; Timothy Smith[2]; John Lawson[1]; [1]Nasa Ames Research Center; [2]NASA Glenn Research Center

2:30 PM
A Paper on Green Corrosion Inhibitors for Reinforcement in Various Reinforced Concrete Structures: *Mohit Kansal*[1]; [1]Water Resources Department

2:50 PM
A Review on Corrosion Inhibitors for Steel in Reinforced Concrete Structures: *Gundeep Singh*[1]; [1]Department of Water Resources Punjab

3:10 PM
A Study on the Mechanical and Corrosion Properties of a Mg-Ca binary Alloy with 1% Sn Addition: *Fatima Zohora*[1]; Israt Upama[1]; Hossain Rashed[1]; [1]Bangladesh University of Engineering & Technology

3:30 PM Break

3:50 PM
Electrochemical Characteristics of Second Phases in 6xxx Series Aluminum Alloys: *Ankur Kumar*[1]; I-Wen Huang[2]; Mary Lyn Lim[2]; Gerald Frankel[1]; [1]The Ohio State University; [2]Novelis Global R&T Center

4:10 PM
Production of New Protective Alloy Coatings FA for Protection Against Wear and Corrosion, Working in an Acidic Environment: Borys Sereda[1]; *Irina Kruglyak*[1]; Dmytro Sereda[1]; [1]DSTU

4:30 PM
Understanding High Temperature Hydrogen Attack (HTHA) in A516-G70 and C-0.5Mo Steels: *Yuan Tian*[1]; Casey Carney[1]; Paul Jablonski[1]; Martin Detrois[1]; Stoichko Antonov[1]; [1]National Energy Technology Laboratory

4:50 PM
A Comparative Study Among Methodologies for Determining the Critical Concentration for Pit Stability: Ccrit: *Mariana Georges*[1]; Gerald Frankel[1]; [1]Ohio State University

IRON AND STEEL (FERROUS ALLOYS)

Developments in Plate and Line Pipe Steels — Developments in Plate and Line Pipe Steels

Sponsored by: AIST Metallurgy—Processing, Products and Applications Technology Committee

Program Organizers: Badirujjaman Syed, Arcelormittal Global Research And Development; Maedeh Pourmajidian, Arcelormittal Global R&D - East Chicago; Matthew Pukansky, Lincoln Electric

Tuesday PM | September 30, 2025
D281 | Convention Center

Session Chairs: Badirujjaman Syed, ArcelorMittal Global R&D - East Chicago; Maedeh Pourmajidian, ArcelorMittal Global R&D - East Chicago

2:00 PM
Non-Isothermal Modeling of NbC Nanoprecipitation During TMCP of X70 Microalloyed Steels Using PRISMA (ThermoCalc): *Rishav Raj*[1]; Barry Wiskel[1]; Douglas Ivey[1]; Michael Gaudet[2]; Hani Henein[1]; [1]University of Alberta; [2]EVRAZ, NA

2:20 PM
Assessment of Pressure Reversal Susceptibility in API X70 ERW Welds Under Hydrogen Environment: *Jongmin Baek*[1]; Chan-hee Lee[2]; Jin-Seop Kwack[3]; Dong-Hyeon Jeon[3]; Hyun-Uk Hong[1]; [1]Changwon National University; [2]Korea Advanced Institute of Science and Technology; [3]Hyundai-Steelpipe

2:40 PM
Investigation of Strain Partitioning in High-Strength Low-Alloy (HSLA) Steels Using In-Situ Tensile Testing with Digital Image Correlation (DIC): *Nafiseh Mohammadtabar*[1]; Alexander Bardelcik[1]; Tom Zhou[2]; Chad Cathcart[2]; [1]University of Guelph; [2]Stelco Incorporated

3:00 PM
Connecting Anisotropy in the In-Plane Strength of Hot Rolled Line Pipe Steel to Its Microstructural Equivalent: *Chetan Kadgaye*[1]; [1]Indian Institute of Technology Roorkee

3:20 PM Break

3:40 PM
Forensic Metallurgy of Pipeline Steel Thermal Histories: Prospects Through EBSD Characterization: *Ayobami Oladipo*[1]; Matthew Steiner[1]; Eric Payton[1]; [1]University of Cincinnati

4:00 PM
Creep Performance of P92 Steel Around Its Composition Range: Effect of N Solubility and Normalization Temperature: *Stoichko Antonov*[1]; Chang-Yu Hung[1]; Yuan Tian[1]; Martin Detrois[1]; Paul Jablonski[1]; [1]National Energy Technology Laboratory

---

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Energy Materials for Sustainable Development — Battery and Storage IV

Sponsored by: ACerS Energy Materials and Systems Division

Program Organizers: Sepideh Akhbarifar, The Catholic University of America -Vitreous State Lab; Jianhua Tong, Clemson University; Yang Bai, University of Oulu; Eva Hemmer, University of Ottawa; Charmayne Lonergan, Missouri University of Science and Technology; Armin Feldhoff, Leibniz University Hannover; Takayoshi Katase, Institute of Science Tokyo; Bed Poudel, Pennsylvania State University; Ekaterina Pomerantseva, Drexel University; Kai He, University of California, Irvine

Tuesday PM | September 30, 2025
B234 | Convention Center

Session Chairs: Jianhua Tong, Clemson University; Candace Chan, Arizona State University

---

2:00 PM Invited
Sustainable Future Batteries: Progress and Opportunities Through Materials Design: *Amy Marschilok*[1]; Esther Takeuchi[1]; Kenneth Takeuchi[1]; [1]Stony Brook University

2:30 PM Invited
Electrochemical Energy Storage with Nanoscale Materials: *Bruce Dunn*[1]; [1]University of California

3:00 PM Invited
Tailoring MXene-Derived Bilayered Vanadium Oxides for High-Performance Energy Storage in Diverse Ion Systems: *Ekaterina Pomerantseva*[1]; [1]Drexel University

3:30 PM Break

3:50 PM Invited
Two-Dimensional Transition Metal Carbides, Carbo-Chalcogenide, and Borides for Electrochemical Energy Storage: *Michael Naguib*[1]; [1]Tulane University

4:20 PM
Liquid Crystal-Based Caloric Materials for Green Cooling Technologies: *Brigita Rozic*[1]; Dejvid Črešnar[1]; Matic Morgan[1]; Andraž Rešetič[1]; Boštjan Zalar[1]; Samo Kralj[2]; Gregor Skačej[3]; Zdravko Kutnjak[1]; [1]Jozef Stefan Institute; [2]University of Maribor; [3]University of Ljubljana

4:40 PM
Inductance-Dominant Impedance Discovered in Polyelectrolyte: *Deborah Chung*[1]; Sathwika Chittluri[1]; [1]University at Buffalo, The State University of New York

---

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Energy Materials for Sustainable Development — Thermoelectrics IV

Sponsored by: ACerS Energy Materials and Systems Division

Program Organizers: Sepideh Akhbarifar, The Catholic University of America -Vitreous State Lab; Jianhua Tong, Clemson University; Yang Bai, University of Oulu; Eva Hemmer, University of Ottawa; Charmayne Lonergan, Missouri University of Science and Technology; Armin Feldhoff, Leibniz University Hannover; Takayoshi Katase, Institute of Science Tokyo; Bed Poudel, Pennsylvania State University; Ekaterina Pomerantseva, Drexel University; Kai He, University of California, Irvine

Tuesday PM | September 30, 2025
B235 | Convention Center

Session Chairs: Amin Nozariasbmarz, Rowan University; Mona Zebarjadi, University of Virginia

---

2:00 PM Invited
Effective Mass from Carrie Concentration-Dependent Seebeck Coefficient: *Hyun-Sik Kim*[1]; [1]University of Seoul

2:30 PM Invited
Uncovering a New Bonding Class: Metavalent Materials and Their Unusual Thermal Transport Properties: *Keivan Esfarjani*[1]; Ali Rayat[1]; Safoura Nayeb Sadeghi[1]; James Xu[1]; [1]University of Virginia

3:00 PM Invited
Hybrid Transverse Thermoelectrics in Artificially Tilted Multilayers: *Takamasa Hirai*[1]; [1]National Institute for Materials Science

3:30 PM Break

3:50 PM Invited
Phonon-Drag-Enhanced Thermoelectric Performance in n-Type $Si_{1-x}Sn_x$ Epitaxial Layers: *Masashi Kurosawa*[1]; Tatsuki Oiwa[1]; Shigehisa Shibayama[1]; Mitsuo Sakashita[1]; Osamu Nakatsuka[1]; [1]Nagoya University

4:20 PM Invited
Thermoelectric Tin-Based Zintl Compounds Containing Rattling Atoms in Tunnel Frameworks: *Takahiro Yamada*[1]; [1]Tohoku University

CERAMIC AND GLASS MATERIALS

Glasses and Optical Materials: Challenges, Advances, and Applications — Structure and Properties of Oxide Glasses

Sponsored by: ACerS Glass and Optical Materials Division

Program Organizers: Morten Smedskjaer, Aalborg University; N. M. Anoop Krishnan, Indian Institute of Technology Delhi

Tuesday PM | September 30, 2025
B132 | Convention Center

Session Chairs: Morten Smedskjaer, Aalborg University; N. M. Anoop Krishnan, IIT Delhi

2:00 PM Invited
Crack Initiation Load of Glass During a Drop Indentation Test: *Satoshi Yoshida*[1]; [1]AGC Inc.

2:30 PM
Strain Rate Dependence of Deformation Mechanisms: Garth Scannell[1]; *Erick VanDuyne*[1]; [1]Corning

2:50 PM
Revealing the Deformation Zone in Oxide Glasses Using In Situ X-Ray Nanodiffraction: *M. Faizal Ussama Jalaludeen*[1]; Johan F. S. Christensen[1]; Anders K. R. Christensen[1]; Soeren S. Soerensen[1]; Sidsel M. Johansen[1]; Samraj Mollick[1]; Yuanzheng Yue[1]; Sebastian Kalbfleisch[2]; Morten M. Smedskjaer[1]; [1] Aalborg University; [2]Lund University

3:10 PM
Modeling Sodium Aluminophosphate Glasses with Two- and Three-Body Potentials From Molecular Dynamics Simulations: *Navid Marchin*[1]; Shingo Urata[2]; Jincheng Du[1]; [1]University of North Texas; [2]AGC Inc.

3:30 PM Break

3:45 PM
Unveiling Structure-Property Relationships in ZrO-Containing Bioactive Glasses via Molecular Dynamics Simulations: *Wenqing Xie*[1]; Jincheng Du[1]; Ying Shi[2]; Qiang Fu[2]; Randall Youngman[2]; [1]University of North Texas; [2]Corning Inc.

4:05 PM
Reactions of Transition Metal Ion-Doped pH-Neutral Borophosphate Glasses in Flowing Simulated Body Fluid: *Rebekah Blatt*[1]; Richard Brow[1]; [1]Missouri University of Science and Technology

4:25 PM
Double-Layer Bioactive Glass Coatings on Titanium Alloy Bioimplants: Composition Effects of Zirconia on Enhancing In Vitro Bioactivity: *Wenqing Xie*[1]; Jincheng Du[1]; Qiang Fu[2]; Ying Shi[2]; [1]University of North Texas; [2]Corning Inc.

4:45 PM
Structure-Property Correlations in the Bi_2O_3-ZnO-B_2O3 Pyroborate Glass System and the Effects of Crucible Dissolution: *Lenorah Haight-Stott*[1]; Nagia Tagiara[2]; Henrik Bradtmüller[3]; Efstratios Kamitsos[2]; Doris Möncke[1]; [1]Alfred University; [2]National Hellenic Research Foundation; [3]University of São Paulo

5:05 PM
Development of Sulfur Melter Tolerance Apparatus for Hanford Nuclear Waste Vitrification: *Jose Marcial*[1]; [1]Pacific Northwest National Laboratory

5:25 PM
Development of Advanced Phosphate Glass Fibers for a Wide Range of Applications: *Nezha Saloumi*[1]; Iliass Daki[1]; [1]Esith, Maroc

FUNDAMENTALS AND CHARACTERIZATION

High-Entropy Materials: Solid Solutions, Intermetallics, Ceramics, Functional Materials and Beyond VI — Experiments: Alloy I

Sponsored by: TMS: Alloy Phases Committee, ACerS Basic Science Division

Program Organizers: Shuozhi Xu, University of Oklahoma; Yiquan Wu, Alfred University; Yu Zhong, Worcester Polytechnic Institute; Michael Gao, National Energy Technology Laboratory; Xingbo Liu, West Virginia University; Peter Liaw, University of Tennessee; Jian Luo, University of California, San Diego; Mitra Taheri, Johns Hopkins University; Amy Clarke, Los Alamos National Laboratory

Tuesday PM | September 30, 2025
C170 | Convention Center

Session Chairs: Jinkyung Kim, Hanyang University; Bunty Tomar, Oklahoma State University

2:00 PM Invited
BCC Particle-Induced Distorted Dislocation Patterns and Deformation Twinning in the Equiatomic FeCrNi Alloy: *Jinkyung Kim*[1]; Jin-Seob Kim[1]; [1]Hanyang University

2:30 PM Invited
Co-Existence of Ferro-Antiferromagnetism and Transport Properties in Fe2MnAl Heusler Alloy: *Aparna Ashok*[1]; Neeru Bhagat[2]; [1]Symbiosis International (Deemed) University; [2]St. Mira's College for Women

3:00 PM
Cryogenic Deformation Behavior of the L12-Precipitation Strengthened FeNiCrCu-Based Ferrous Alloy: *Jin-Seob Kim*[1]; Jin-Kyung Kim[1]; [1]Hanyang University

3:20 PM Break

3:40 PM Invited
Entropy Stabilized (Co,Cu,Ni,Mg,Zn)O: A Comprehensive Study of Cu-Compositional Variation on Structure and Electrical Behavior: Arturo Meza[1]; *Aneeta Padhan*[2]; Alexander Dupuy[3]; Julie Schoenung[2]; [1]University of California, Irvine; [2]Texas A&M University; [3]University of Connecticut

4:10 PM Invited
Defect-Driven Precipitation Pathways in a High Entropy Alloy: Interplay Between Recovery, Recrystallization, and Phase Evolution: *Bharat Gwalani*[1]; [1]North Carolina State University

4:40 PM
Mechanocatalysis on NiCoCr Alloy: An In-Situ Atomic Force Microscopy Study of Stress-Induced Tribofilm Formation: *Bunty Tomar*[1]; Vikas Paduri[1]; Ritesh Sachan[1]; Pranjal Nautiyal[1]; [1]Oklahoma State University

5:00 PM Invited
Wear and Oxidation Mechanism Transitions in MEAs and HEAs From Room Temperature to 1,000° C: *Yu Zou*[1]; [1]University of Toronto

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Hybrid Organic-Inorganic Materials for Alternative Energy — Hybrid Organic-Inorganic Materials for Alternative Energy I

Program Organizers: Andrei Jitianu, Lehman College, City University of New York; Lisa Klein, Rutgers University; Lia Stanciu, Purdue University; Mihaela Jitianu, William Paterson University; Alessandro Martucci, University of Padova

Tuesday PM | September 30, 2025
B246 | Convention Center

Session Chair: Lisa Klein, Rutgers University

2:00 PM Invited
Silicalite Nanosheets with Surface Quaternary Ammonium Cations for Polymer Composite Anion Exchange Membranes: *Yukta Sharma*[1]; Chloe Constantinides[1]; Devraj Singh[1]; Junhang Dong[1]; [1]University of Cincinnati

2:30 PM Invited
Carbon Dots-Based Nanocomposites for Energy and Optical Applications: *Luca Malfatti*[1]; [1]University of Sassari

3:00 PM Invited
Hybrid Carbon Nanotube – Gold Electrode Materials for High Performance Energy Storage Devices: *Noe Alvarez*[1]; Chaminda Nawarathne[1]; Jorge Seminario[1]; Camila Jaillita[1]; [1]University of Cincinnati

3:30 PM Break

3:40 PM Invited
Tuned Wettability of Hybrid Sol-Gel Coatings for Thermal Management and Ice Prevention: *Alessandro Martucci*[1]; [1]University of Padova

4:10 PM Invited
New Families of Layered Hybrid Organic/Inorganic Crystals via the Topotactic Transformation of Solid-State Lattices: *Joshua Goldberger*[1]; Yetunde Odeyemi[1]; [1]The Ohio State University

4:40 PM Invited
Novel Organic-Inorganic Hybrid Thin Films for Energy-Efficient Future Microelectronics: *Chang-Yong Nam*[1]; [1]Brookhaven National Laboratory

5:10 PM Invited
Anticorrosive Hybrid Glass Coatings for Protection of AZ31B Magnesium Alloy in Alkaline Media: *Andrei Jitianu*[1]; Mario Aparicio[2]; Jadra Mosa[2]; Patrick Garana[3]; Helen Yousaf[3]; Mihaela Jitianu[3]; Lisa Klein[4]; [1]Lehman College, City University of New York; [2]Instituto de Cerámica y Vidrio, Consejo Superior de Investigaciones Científicas (CSIC); [3]William Paterson University; [4]Rutgers University

SPECIAL TOPICS

Innovative Materials Solutions for a Rapidly Evolving Market — Innovative Materials Solutions for a Rapidly Evolving Market

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Materials Processing and Manufacturing Division

Program Organizers: Carelyn Campbell, National Institute of Standards and Technology; Paul Mason, Thermo-Calc Software Inc.; James Saal, Citrine Informatics

Tuesday PM | September 30, 2025
C162B | Convention Center

Session Chairs: Carelyn Campbell, NIST; James Saal, Citrine Informatics

2:00 PM Introductory Comments

2:05 PM Keynote
A Materials Enabled Automotive Future: *Paul Krajewski*[1]; Linda Stancin[1]; Xiaosong Huang[1]; [1]General Motors R&D Center

2:45 PM Keynote
Innovative Metals Processing with Molten Oxide Electrolysis: *Guillaume Lambotte*[1]; [1]Boston Metals

3:25 PM Question and Answer Period

3:45 PM Break

4:05 PM Keynote
From Microstructure to Market: Data-Driven Steel Design & Commercialization: *Patrick Cleaver*[1]; [1]Cleveland-Cliffs Steel Corporation

4:45 PM Keynote
A Look at Today's Manufacturing Challenges and Opportunities: *Pin Lu*[1]; [1]Solvus Global

5:25 PM Question and Answer Period

PROCESSING AND MANUFACTURING

Lightweight Composites, Materials & Alloys — Microstructure and Properties

Sponsored by: TMS: Materials Characterization Committee

Program Organizers: Ramasis Goswami, Naval Research Laboratory; Tanjore Jayaraman, United States Air Force Academy; Ramachandra Canumalla, Weldaloy Specialty Forgings; Aashish Rohatgi, Pacific Northwest National Laboratory

Tuesday PM | September 30, 2025
B231 | Convention Center

Session Chair: Tanjore V. Jayaraman, United States Air Force Academy

2:00 PM
Effect of 3D Fiber Architecture on the Internal Microstructure and Dynamic Mechanical Properties of Multi-Directional Cf-SiCm Composites: *Shibayan Roy*[1]; Arjun Mahato[1]; Samar Mondal[1]; Saurav Sahoo[1]; M Thangarasu[1]; [1]Indian Institute of Technology Kharagpur

2:20 PM
Effect of Microstructure on Tensile Properties of Nickel Foam With Open Cell Structure: *Farrukh Saleem*[1]; [1]South China University of Technology

2:40 PM
Evaluation of Al-Ca-Ce Alloy System for High Temperature Applications: *Aditya Rohan Narra*[1]; Clement Ekaputra[2]; Amit Shyam[2]; Alex Plotkowski[2]; [1]University of Tennessee, Knoxville; [2]Oak Ridge National Laboratory

3:00 PM
Improving Al7075 Mechanical Properties via Ag Reinforcement: *Mohammed Tashkandi*[1]; [1]Northern Border University

3:20 PM Break

3:40 PM
Investigation of Al-Al2O3 Metal/Ceramic Multilayers and Lightweight Composites: *Ramasis Goswami*[1]; Alex Moser[1]; James Wollmershauser[1]; Chandra Pande[1]; [1]Naval Research Laboratory

4:00 PM
Precipitate Patterning of Chromium in CuCrZr Alloy: *Robert Meyer*[1]; Nathan Fleming[1]; Ram Canumalla[1]; [1]Weldaloy Specialty Forgings

4:30 PM
Microstructure Evolution, Mechanical Properties, and Biological Response of Ti-Nb-Zr-Ta (TNZT)/hBN Metal Matrix Composites Processed via Spark Plasma Sintering (SPS): *Satyavan Digole*[1]; Tushar Borkar[1]; [1]Cleveland State University

4:50 PM
Novel, Energy-Efficient Spot-Welding Process Optimized for Dissimilar Joining of 6XXX-Series Aluminum to Advanced High Strength Steels: *Rakhi Bawa*[1]; Kaue Riffel[1]; Antonio Ramirez[1]; [1]The Ohio State University

SPECIAL TOPICS

Materials and Manufacturing in Low Earth Orbit (and Beyond) — Materials Testing & Modeling for Space Applications

Sponsored by: TMS: Solidification Committee

Program Organizers: David Williams, Ohio State University; Alan Luo, Ohio State University; Glenn Daehn, Ohio State University; Antonio Ramirez, The Ohio State University; Boyd Panton, Ohio State University; Nathan Ames, Ohio State University; Ken Savin, REdwire Space; Jonathan Volk, Voyager Space

Tuesday PM | September 30, 2025
C161B | Convention Center

Session Chair: Tengfei Luo, University of Notre Dame

2:00 PM Introductory Comments

2:10 PM
Ultra-Strong, Lightweight Polymer Composite Films for Space Applications: *Tengfei Luo*[1]; Seunghyun Moon[1]; JR Dennison[2]; [1]University of Notre Dame; [2]Utah State University

2:30 PM
The Ionizing Radiation Environment in Low Earth Orbit: *Jim Adams*[1]; Samuel Eichel[1]; Gary Zank[1]; [1]University of Alabama in Huntsville

2:50 PM
Machine Learning-Driven Design of Polymers Resistant to Atomic Oxygen in Low Earth Orbit: *Aubrey Toland*[1]; [1]Georgia Institute of Technology

3:10 PM
Delta-to-Gravity™: Machine Learning Informed Predictive Analytics for Microgravity and Scalable In-Space Manufacturing: *Ioana Cozmuta*[1]; [1]G-SPACE Inc

3:30 PM Break

3:50 PM
Atomic Oxygen-Induced Degradation in a Polyimide Film From Reactive Molecular Dynamics Simulations: *Jacob Breese*[1]; Lisa Hall[1]; Cody Bezik[2]; Vikas Varshney[2]; [1]The Ohio State University; [2]Air Force Research Laboratory

4:10 PM
Bridging Atomistic-Continuum Simulations for Spacecraft Materials in Extreme Conditions: *Chinonso Ugwumadu*[1]; Roxanne Tutchton[1]; [1]Los Alamos National Laboratory

4:30 PM Concluding Comments

NUCLEAR ENERGY

Metallic Nuclear Fuel Design, Fabrication and Characterization — Metallic Nuclear Fuel Design, Fabrication and Characterization II

Sponsored by: TMS: Materials Characterization Committee, TMS: Nuclear Materials Committee

Program Organizers: Ericmoore Jossou, Massachusetts Institute of Technology; Linu Malakkal, Idaho National Laboratory; Nana Ofori-Opoku, McMaster University; Anil Prasad, Canadian Nuclear Laboratories; Lingfeng He, North Carolina State University; Marat Khafizov, Ohio State University

Tuesday PM | September 30, 2025
D280 | Convention Center

Session Chairs: Anil Prasad, Canadian Nuclear Laboratories; Ericmoore Jossou, Massachusetts Institute of Technology; Anthony Harrup Gutiérrez, Massachusetts Institute of Technology; Zilong Hua, Idaho National Laboratory

2:00 PM
Three-Dimensional Microstructural Evolution of Irradiated U-10Zr Nuclear Fuel Revealed by Synchrotron X-Ray Micro-CT: *Anthony Harrup Gutiérrez*[1]; Riley Moeykens[1]; Jana Howard[2]; Michael Drakopoulos[3]; Tiankai Yao[4]; Ericmoore Jossou[4]; [1]Massachusetts Institute of Technology; [2]Boise State University; [3]Brookhaven National Laboratory; [4]Idaho National Laboratory

2:20 PM
Characterization of High Uranium Density Compositionally Complex Refractory Alloys: *Malachi Nelson*[1]; Boone Beausoleil[1]; James Zillinger[1]; Brian Newell[1]; George Evans[1]; [1]Idaho National Laboratory

2:40 PM
Advanced Characterization of Pu Oxidation With S/TEM: *Douglas Smith*[1]; Matthew Janish[1]; Sarah Hernandez[1]; [1]Los Alamos National Laboratory

3:00 PM
Understanding Grain Refinement and Gas Bubble Evolution in U-10Mo Fuel Using Phase-Field Modeling: *Sourabh Bhagwan Kadambi*[1]; Larry Aagesen[1]; Benjamin Beeler[2]; [1]Idaho National Laboratory; [2]North Carolina State University

3:20 PM Break

3:40 PM Invited
High Temperature Structures, Oxidation, and Thermodynamics of Uranium Fuels: *Xiaofeng Guo*[1]; Emma Kindall[1]; Natalie Yaw[1]; Sam Karcher[1]; Malin Wilkins[1]; John McCloy[1]; Adrien Terricabras[2]; Scarlett Widgeon Paisner[2]; Arjen van Veelen[2]; Hongwu Xu[2]; Joshua White[2]; [1]Washington State University; [2]Los Alamos National Laboratory

4:10 PM
Impact of Dislocation Loops on the Thermal Transport in Nuclear Fuels: A First-Principles Atomistic Approach: *Saqeeb Adnan*[1]; Marat Khafizov[1]; [1]The Ohio State University

4:30 PM Invited
Thermal Transport of Uranium Nitride (UN) After Irradiation: *Zilong Hua*[1]; Emma Kindall[2]; Md Minaruzzaman[3]; Anshul Kamboj[1]; Daniel Murray[1]; Kaustubh Bawane[1]; Amey Khanolkar[1]; Ella Pek[1]; Jennifer Watkins[1]; Marat Khafizov[3]; David Hurley[1]; [1]Idaho National Laboratory; [2]Washington State University; [3]The Ohio State University

BIOMATERIALS

Next Generation Biomaterials — Next Generation Biomaterials IV

Sponsored by: ACerS Bioceramics Division, TMS: Biomaterials Committee

Program Organizers: Roger Narayan, University of North Carolina; Tanveer Tabish, University of Oxford

Tuesday PM | September 30, 2025
C171 | Convention Center

Session Chairs: Abby Whittington, Virginia Tech; Donna Guillen, Idaho National Laboratory

2:00 PM Invited
Developing Multi-Material Resins for Vat Photopolymerization Systems: *Abby Whittington*[1]; [1]Virginia Tech

2:20 PM Invited
All-Solid-State Ion-Selective Sensors for Continuous Measurements of Electrolyte Biomarkers: *Andreas Stein*[1]; [1]University of Minnesota

2:40 PM Invited
Next-Generation Biomaterials from Mycelial Materials: *Steven Naleway*[1]; [1]University of Utah

3:00 PM Invited
Super-Resolution Live Imaging of Cells in Confined Microspaces Using 3D CYTOP Microfluidic Chips Fabricated by Femtosecond Laser: *Koji Sugioka*[1]; Mirai Hanzawa[1]; Kotaro Obata[1]; Masatoshi Takagi[2]; Asako Sakaue-Sawano[2]; Asako Tosaki[2]; Satoshi Shimozono[2]; Felix Sima[1]; Hiroyuki Kawano[2]; Takuro Tojima[1]; Daisuke Miyashiro[1]; Akihiko Nakano[1]; Atsushi Miyawaki[2]; [1]RIKEN Center for Advanced Photonics; [2]RIKEN Center for Brain Science

3:20 PM Break

3:40 PM Invited
Unlocking the Secrets of Enamel: Advancing Fracture-Resistant Ceramics: *Donna Guillen*[1]; Zherui Guo[2]; Bradley Huddleston[1]; Jack Grimm[3]; Cameron Renteria[3]; Dula Parkinson[4]; Viktor Nikitin[5]; Carli Marsico[3]; Dwayne Arola[3]; [1]Idaho National Laboratory; [2]Purdue University; [3]University of Washington; [4]Lawrence Berkeley National Laboratory; [5]Argonne National Laboratory

4:00 PM Invited
Programmed Apoptosis in Bone-Metastatic Prostate and Breast Cancer via Phyto-Therapeutic Application in 3D in Vitro Models of Breast and Prostate Cancer: *Kalpana Katti*[1]; Quyen Hoang[1]; Preetham Ravi[1]; Kalidas Shetty[1]; Dinesh Katti[1]; [1]North Dakota State University

4:20 PM Invited
Scalable Electrospinning for Biomaterials Applications: *Pelagia-Irene Gouma*[1]; [1]Ohio State University

4:40 PM Invited
Hybrid Nanostructured Scaffolds for Tissue-Engineering and Bio-Detection: *Sharmila Mukhopadhyay*[1]; [1]University of Maine

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Porous Materials for Energy and Environment Applications — Porous Materials I

Sponsored by: ACerS Basic Science Division, ACerS Electronics Division, ACerS Energy Materials and Systems Division

Program Organizers: Winnie Wong-Ng; Kevin Huang, University of South Carolina; Lan Li, Boise State University

Tuesday PM | September 30, 2025
B244/245 | Convention Center

Session Chairs: Lan Li, Boise State University; Kevin Huang, University of South Carolina; Winnie Wong-Ng, National Institute of Standards and Technology (NIST)

2:00 PM Introductory Comments

2:05 PM Invited
Adsorption and Separations of Small Molecules in MOFs: *Craig Brown*[1]; Ryan Klein[2]; Hayden Evans[1]; [1]National Institute of Standards and Technology; [2]University of California Berkeley

2:35 PM Invited
Design of Novel Porous Materials From Biomass based Precursors for Functional Applications: *Surojit Gupta*[1]; [1]University of North Dakota

3:05 PM Invited
Density Functional Theory Calculations of Metal-Organic Frameworks for Selective Gas Adsorption: *Eric Cockayne*[1]; [1]National Institute of Standards and Technology

3:35 PM Break

3:55 PM Invited
Automated Pore Identification and Quantification Using Edge Vectorization: *Michael Mulligan*[1]; Oliver Fowler[1]; Josh Voell[1]; Howie Fang[1]; Mark Atwater[1]; [1]Liberty University

4:25 PM Invited
Development of Phase Inversion Derived Solid Oxide Cells: Yeting Wen[1]; Jiaxin Lu[1]; *Kevin Huang*[1]; [1]University of South Carolina

4:55 PM Invited
Beyond Ideal Strength Scaling in Ceramic Architected Materials Subjected to Hydrostatic Loads: Fakhreddin Emami[1]; *Andrew Gross*[1]; [1]University of South Carolina

5:25 PM Invited
Examination of Pressure Drop Exhibited During the Flow of Air Through Binder Jet Printed Porous Metals: *Samuel Greulich*[1]; Markus Chmielus[1]; [1]University of Pittsburgh

5:55 PM
SPH Modeling of Microstructure Evolution During Battery Electrode Drying: *Zirui Mao*[1]; Shenyang Hu[1]; [1]Pacific Northwest National Laboratory

NUCLEAR ENERGY

Progressive Solutions to Improve the Corrosion Resistance of Nuclear Waste Storage Materials — Iron Phosphate Glasses and Advanced Characterization Techniques for Nuclear Waste Forms

Sponsored by: TMS: Corrosion and Environmental Effects Committee, TMS: Energy Committee

Program Organizers: Madeleine Jordache, Stevens Institute of Technology; Gary Pickrell, Virginia Tech

Tuesday PM | September 30, 2025
D283 | Convention Center

Session Chairs: Madeleine Jordache, Stevens Institute of Technology; Gary Pickrell, Virginia Tech

2:00 PM Introductory Comments

2:05 PM Invited
Elucidating the Structure-Property Relation of Iron Phosphate Glasses as a Nuclear Waste Form: *Jincheng Du*[1]; Jayani Kalahe[1]; [1]University of North Texas

2:35 PM Invited
Iron Phosphate Glasses for Molybdenum-Rich Waste Streams: *Richard Brow*[1]; Jincheng Bai[1]; CW Kim[2]; [1]Missouri University of Science and Technology; [2]Mo-Sci, LLC

3:05 PM Invited
Recent Developments of Structure-Terahertz Property Relationships in Borosilicate Glasses: *S. K. Sundaram*[1]; [1]Alfred University

3:35 PM Break

3:55 PM
Quantitative Phase Characterization of Nuclear Cements and Concretes Using Non-Destructive 3D Automated Mineralogy and Enhanced Deep-Learning Reconstruction via X-ray Microscopy: *Andy Holwell*[1]; [1]Carl Zeiss Microscopy LLC

4:25 PM Invited
Improving the Surface Properties of Glasses With 2D Material Coatings: *N M Anoop Krishnan*[1]; Sourav Sahoo[1]; Nitya Gosvami[1]; [1]Indian Institute of Technology Delhi

PROCESSING AND MANUFACTURING

Sintering and Related Powder Processing Science and Technologies — Flash and Ultra-Rapid Sintering: Mechanisms, Control, and Applications

Sponsored by: TMS: Powder Materials Committee, ACerS Basic Science Division

Program Organizers: Charles Maniere, CNRS; Eugene Olevsky, San Diego State University; Ricardo Castro, Lehigh University; Elisa Torresani, San Diego State University; Diletta Giuntini, Eindhoven University of Technology; Wolfgang Rheinheimer, University of Stuttgart

Tuesday PM | September 30, 2025
B233 | Convention Center

Session Chairs: Mattia Biesuz, Trento University; Eugene. A. Olevsky, San Diego State University

2:00 PM Invited
Uniform Flash Sintering of Zirconia-Based Ceramics by Compositional Design: Shenghuan Ding[1]; *Richard Todd*[1]; [1]University of Oxford

2:30 PM Invited
Electro-Nano-Pulsing for Localized Grain Boundary Engineering and Quasi-Instantaneous Microstructural Control: *Eugene Olevsky*[1]; Wenwu Xu[1]; Elisa Torresani[1]; Runjian Jiang[1]; Andrii Maximenko[1]; [1]San Diego State University

3:00 PM Invited
Ultrafast High-Temperature Sintering of YSZ: *Mattia Biesuz*[1]; [1]University of Trento

3:30 PM Break

3:50 PM Invited
From Flash Sintering to Ultrafast Sintering Without Electric Currents in Specimens: *Jian Luo*[1]; [1]University of California, San Diego

4:20 PM Invited
Field-Assisted Sintering of Ceramic Carbides and Borides: *Vincenzo Sglavo*[1]; [1]University of Trento

SPECIAL TOPICS

TMS Frontiers of Materials Award Symposium: Harnessing Charged and Chemical Defects for Exceptional Structural and Functional Properties — TMS Frontiers of Materials Award Symposium II

Sponsored by: TMS: Nanomechanical Materials Behavior Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizer: Yu Zou, University of Toronto

Tuesday PM | September 30, 2025
C162A | Convention Center

Session Chair: Yu Zou, University of Toronto

2:00 PM Invited
Exploring Photoplastic and Electroplastic Phenomena in ZnS by Misfit Dislocation Imaging: Alexandra Fonseca Montenegro[1]; Sevim Genlik Polat[1]; Md Mohsinur Rahman Adnan[1]; Maryam Ghazisaeidi[1]; *Roberto Myers*[1]; [1]Ohio State University

2:30 PM Invited
Phenomena in Metals and Alloys Controlled at the Single Defect Level: *Daniel Gianola*[1]; [1]University of California, Santa Barbara

3:00 PM Invited
Electroplasticity of Metallic Nanomaterials Under Extreme Electrical Field: *Jiangwei Wang*[1]; [1]School of MSE, Zhejiang University

3:30 PM Break

3:50 PM Invited
Understanding Recombination-Enhanced Dislocation Processes for Semiconductor Optoelectronics: *Kunal Mukherjee*[1]; [1]Stanford University

4:20 PM Invited
Concentration Gradients of Ionic Point Defects in Functional Oxides: *Qiyang Lu*[1]; [1]Westlake University

MATERIALS-ENVIRONMENT INTERACTIONS

Understanding and Mitigating High Temperature Corrosion Processes Through Synergistic Integration of Experimental, Computational and Manufacturing Techniques — High Temperature Corrosion Challenges and Corrosion Resistant Coatings: An Industrial Perspective

Sponsored by: TMS: Corrosion and Environmental Effects Committee

Program Organizers: Rishi Pillai, Oak Ridge National Laboratory; Brian Gleeson, University of Pittsburgh; Tianle Cheng, National Energy Technology Laboratory; Mathias Galetz, DECHEMA-Forschungsinstitut

Tuesday PM | September 30, 2025
D181 | Convention Center

Session Chairs: Rishi Pillai, ORNL; Mathias Galetz, DECHEMA Corrosion Center; Brian Gleeson, University of Pittsburgh

2:00 PM Invited
High-Temperature Corrosion Challenges of Wrought Alloys in Extreme Environments: *Bingtao Li*[1]; Lee Pike[1]; Vinay Deodeshmukh[1]; [1]Haynes International

2:30 PM
Understanding Compositional Effects on the Oxidation Behavior of Binary Nb-Ti Alloys: *Lauren Bowling*[1]; Elizabeth Opila[1]; [1]University Of Virginia

2:50 PM
Impact of Water Vapor and Hydrogen on Oxidation Behavior of Chromia-Forming Ni-Based Alloys: *Marie Romedenne*[1]; Yi-Feng Su[1]; Ashok Vayyala[2]; Jonathan Poplawsky[1]; Rishi Pillai[1]; [1]Oak Ridge National Laboratory; [2]FZ Juelich

3:10 PM Break

3:30 PM Invited
Evaluating CMAS-Coating Interactions for Jet Engine Applications: *Eeshani Paresh Godbole*[1]; [1]GE Aerospace Research

4:00 PM Invited
Development of Low Temperature Sulphidation Resistant Coatings in Aerospace Environments: *Jonathan Leggett*[1]; [1]Rolls-Royce Plc

4:20 PM
Novel Corrosion Resistant Coatings Working with High-Temperature Corrosion Obtained Using FA- Charges: *Borys Sereda*[1]; Irina Kruglyak[1]; Dmytro Sereda[1]; Oleg Stasevich[1]; Konstantin Komendarov[1]; [1]DSTU

MATERIALS-ENVIRONMENT INTERACTIONS

Understanding Corrosion-Related Cracking — Corrosion at Elevated Temperatures and Cracking

Sponsored by: TMS: Corrosion and Environmental Effects Committee

Program Organizers: Tianle Cheng, National Energy Technology Laboratory; Hyokyung Sung, Kookmin University; Gordon Tatlock, University of Liverpool

Tuesday PM | September 30, 2025
D182 | Convention Center

Session Chairs: Gordon Tatlock, University of Liverpool; Tianle Cheng, National Energy Technology Laboratory

2:00 PM Keynote
Pre-Crack Degradation Pathways of NaCl-Assisted Hot Corrosion of a 2nd Generation Ni-Based Superalloy: Preston Nguyen[1]; Douglas Konitzer[1]; *Brian Gleeson*[1]; [1]University of Pittsburgh

2:40 PM
Understanding Pit Morphological Features That Initiate SCC in SS304H Used for Nuclear Waste Storage Canisters: *Daria Bentley*[1]; Timothy Burnett[2]; Jenifer Locke[1]; [1]Ohio State University; [2]University of Manchester

3:00 PM Invited
Effect of Deposit Chemistry on the Stress Corrosion Cracking Susceptibility of CMSX-10 at 550°C and 700°C: *Fabian Duarte Martinez*[1]; Jonathan Leggett[2]; Grant Gibson[2]; Simon Gray[1]; John Nicholls[1]; [1]Cranfield University; [2]Rolls Royce Ltd

3:30 PM Break

3:50 PM Keynote
Environmentally Assisted Cracking in Ni-based Superalloys: *Gordon Tatlock*[1]; [1]University of Liverpool

4:30 PM
Impact of Alloy Composition and Liquid Chemistry on Cracking Susceptibility of Fusion Candidate Structural Materials in Liquid Lithium: *Marie Romedenne*[1]; Claude De Lamater-Brotherton[1]; Bruce A. Pint[1]; [1]Oak Ridge National Laboratory

4:50 PM Invited
Phase-Field Modeling of Oxidation and Cracking in Environmental Barrier Coatings: Tianle Cheng[1]; Fei Xue[1]; Yinkai Lei[1]; Richard Oleksak[1]; *Youhai Wen*[1]; [1]National Energy Technology Laboratory

5:20 PM
First Experimental Evidence of Liquid Metal Embrittlement of Two Titanium Alloys by Lithium: *Itza Camila Hittner*[1]; Thierry Auger[1]; Bassem Barkia[1]; Jean-Louis Courouau[2]; [1]PIMM Laboratory, Arts et Metiers Institute of Technology, CNRS, CNAM; [2]Université Paris-Saclay, CEA, Service de recherche en Corrosion et Comportement des Matériaux

CERAMIC AND GLASS MATERIALS

2D Materials: Synthesis, Properties, and Applications — 2D Materials: Synthesis, Properties, and Applications

Sponsored by: ACerS Basic Science Division, ACerS Energy Materials and Systems Division, TMS: Chemistry and Physics of Materials Committee

Program Organizers: Christopher Shuck, Rutgers University; Dave Estrada, Boise State University; Nicholas Glavin, Air Force Research Laboratory

Wednesday AM | October 1, 2025
B130 | Convention Center

Session Chair: David Estrada, Boise State University

8:00 AM
Mn-Doping of Double Transition Metal MXenes for Magnetic Property Tuning: *Annabelle Bedford*[1]; Anupma Thakur[1]; Kat Nykiel[1]; Nithin Chandran[1]; Spencer Isbell[1]; Alejandro Strachan[1]; Babak Anasori[1]; [1]Purdue University

8:30 AM
Thermal and Mechanical Properties of Low Dimensional Carbon Materials: Abigail Eaton[1]; *Arun Nair*[1]; [1]Air Force Institute of Technology

8:50 AM
Ab Initio Investigation of 2D-NbC and NbCO MXenes as High-Performance Anode Materials for Na- and Li-Ion Batteries: *Nishat Sultana*[1]; Abdullah Amin[2]; Eric Payton[1]; Kyun Kim Woo[1]; [1]University of Cincinnati; [2]University of Dayton

9:10 AM
Improving the Electromagnetic Interference Shielding Performance of Exfoliated-Graphite-Based Flexible Graphite Sheet by Engineering a Monotonic Density Gradient Along the Thickness of the Sheet: *Deborah Chung*[1]; Akshita Yadav[1]; [1]University at Buffalo, The State University of New York

9:30 AM
Multi-Band Luminescence From a Rare Earth-Based Two-Dimensional Material: *Michael Susner*[1]; Rahul Rao[1]; Emmanuel Rowe[1]; Ryan Siebenaller[1]; Thuc Mai[1]; Ruth Pachter[1]; Deep Jariwala[1]; Joshua Hendrickson[1]; [1]AFRL Materials and Manufacturing Directorate

10:00 AM Break

10:20 AM
Surface Inductance as a New Attribute for Revealing the Surface Structure of Materials: *Deborah Chung*[1]; [1]University at Buffalo, The State University of New York

10:40 AM
Multifunctional CeSe@TiSe–C Coated Separators for Improved Lithium–Sulfur Battery Performance: Amirhossein Mirtaleb[1]; *Ruigang Wang*[1]; [1]Michigan State University

11:00 AM
Synthesis of a Novel High-Performance Siloxene Based 2D Material for Durable and Transparent Superhydrophobic Coatings with Self-Cleaning and Anti-Icing Properties: *Brahim Nomeir*[1]; [1]MASCIR

11:20 AM
Synthesis of Two-Dimensional Rare Earth Oxychloride Phases: LaOCl, NdOCl, ErOCl, and YbOCl: *Muhammad Sharif Uddin*[1]; Nithin Chandran B.S.[1]; Anupma Thakur[1]; Brian C. Wyatt[1]; Babak Anasori[1]; [1]Purdue University

11:40 AM
Comparison of Thermodynamic Prediction with Experimental Observations of Refractory Metal Carbides Synthesized Using CVD: *Sajjad Hasan*[1]; Nishat Sultana[1]; Phillisity Neal[1]; Jesus Acosta[1]; Eric Payton[1]; [1]University of Cincinnati

SPECIAL TOPICS

ACerS Robert B. Sosman Award Symposium: Solid State Chemistry Meets Solid State Ionics — ACerS Robert B. Sosman Award Symposium

Sponsored by: ACerS Basic Science Division

Program Organizer: William Chueh, Stanford University

Wednesday AM | October 1, 2025
B131 | Convention Center

Session Chair: William Chueh, Stanford University

8:00 AM Invited
A Deep Dive into the Structure, Transport, and Surface Exchange Kinetics of the BaCoxFe0.8-xZr0.1Y0.1O3-d (BCFZY, 0.1x0.7) Triple-Conducting Oxide System: *Ryan O'Hayre*[1]; Yewon Shin[1]; Michael Sanders[1]; Zhen Jiang[2]; Christopher Wolverton[2]; Sossina Haile[2]; Kennedy Agyekum[3]; Bernadette Cladek[3]; Katharine Page[3]; Jue Liu[4]; Bright Ogbolu[5]; Erica Truong[5]; Yan-Yan Hu[5]; [1]Colorado School of Mines; [2]Northwestern University; [3]University of Tennessee; [4]Oak Ridge National Laboratory; [5]Florida State University

8:30 AM Question and Answer Period

8:35 AM Invited
Electro-Chemo-Mechanics of (Ce,Pr)O2-ä Nanostructures: *Nicola Perry*[1]; [1]University of Illinois at Urbana-Champaign

9:05 AM Question and Answer Period

9:10 AM Invited
Atomic and Dynamic Insights into Transport, Mechanics and Failure in Energy Electroceramics: *Xin Xu*[1]; [1]Arizona State University

9:40 AM Question and Answer Period

9:45 AM Invited
Guiding Mixed Anion Material Synthesis with a Computational-Experimental Feedback Loop: Aksha Prince[1]; Dmitri LaBelle[1]; Yong-Jie Hu[1]; *Jill Wenderott*[1]; [1]Drexel University

10:15 AM Question and Answer Period

10:20 AM Break

10:40 AM Invited
Earth as a Factory: Interfacial and Subsurface Electron Transfer for Clean Fuel Generation: *Iwnetim Abate*[1]; [1]Massachusetts Institute of Technology

11:10 AM Question and Answer Period

11:15 AM Invited
Oxygen Transport in Lithium Layered Oxides: *William Chueh*[1]; [1]Stanford University

11:45 AM Question and Answer Period

ADDITIVE MANUFACTURING

Additive Manufacturing Modeling, Simulation, and Machine Learning: Microstructure, Mechanics, and Process — AM Modeling - Microstructures and Thermal Analyses I

Sponsored by: TMS: Additive Manufacturing Committee, TMS: Integrated Computational Materials Engineering Committee

Program Organizers: Jing Zhang, Purdue University; Li Ma, Johns Hopkins Applied Physics Laboratory; Charles Fisher, Office Of Naval Research; Brandon McWilliams, US Army Research Laboratory; Yeon-Gil Jung, Korea Institute of Ceramic Engineering & Technology

Wednesday AM | October 1, 2025
C150 | Convention Center

Session Chairs: Li Ma, Johns Hopkins University Applied Physics Laboratory; Charles Fisher, NSWC Carderock Division; Jing Zhang, Purdue University

---

8:00 AM
Enhancing Additive Manufacturing Process Parameter Design by Computational Fluid Dynamics: *Adriana Eres-Castellanos*[1]; Tomas Scuseria[1]; Omar Mireles[1]; Zach Jibben[1]; Nathan Peterson[1]; Lindsay O'Brien[1]; Cheryl Hawk[1]; Amber Black[1]; Amy Clarke[1]; [1]Los Alamos National Laboratory

8:20 AM
Interpreting Peak Temperature Distributions in Laser Powder Bed Fusion Through Surface Geometry and Simulated Imaging: *Craig Weeks*[1]; Jonathan Malen[1]; Satbir Singh[1]; [1]Carnegie Mellon University

8:40 AM
Cellular Automata Modeling of Microstructure and Porosity Formation in Al-10Si Alloy Laser Powder Bed Fusion Process: *Buwei Chen*[1]; Michael Moodispaw[1]; Jianyue Zhang[1]; Qigui Wang[1]; Alan Luo[1]; [1]Ohio State University

9:00 AM
Extension of the Pass Scale Method for Simulating Laser Powder Bed Fusion Additive Manufacturing Microstructures: *Gregory Wong*[1]; Ioannis Dalezios[1]; Nicholas Lamprinakos[1]; Gregory Rohrer[1]; Anthony Rollett[1]; [1]Carnegie Mellon University

9:20 AM
Process Monitoring in SolidStir® AM for Process Control and Quality Assurance: *Anurag Gumaste*[1]; Pankaj Kulkarni[1]; Kumar Kandasamy[1]; [1]Enabled Engineering

9:40 AM
Melt Pool Plume Behavior in Laser Powder Bed Fusion: *Jack Beuth*[1]; Alexander Myers[1]; Christian Gobert[1]; Jonathan Malen[1]; [1]Carnegie Mellon University

10:00 AM Break

10:20 AM
Microstructure Design Using Kinetic Model of the ä-Ferrite to ã-Austenite Phase Transformation in 17-4 PH Stainless Steel LPBF: Sohee An[1]; Seung-Ho Lee[1]; Jongcheon Yoon[1]; Il Sohn[2]; Kyunsuk Choi[3]; *Du-Rim Eo*[1]; [1]Korea Institute of Industrial Technology; [2]Yonsei University; [3]Hanbat University

10:40 AM
Multi-Physics Simulation of Directed Energy Deposition With Blended Materials: *Chao Tang*[1]; Peng Chen[1]; Siu Sin Quek[1]; Ke Wu Bai[1]; [1]Agency for Science, Technology and Research

11:00 AM
The Melt Pool Spatter Problem in Additive Manufacturing: *Jack Beuth*[1]; Nicholas O'Brien[1]; Christian Gobert[1]; Satbir Singh[1]; David Deisenroth[2]; Jordan Weaver[2]; Amir Barati Farimani[1]; [1]Carnegie Mellon University; [2]NIST

11:20 AM
Accelerating Cellular Automata Grain Structure Predictions via Surrogate Thermal Modeling in Laser Powder Bed Fusion: *Michael Paleos*[1]; Berkay Bostan[1]; Albert To[1]; [1]University of Pittsburgh

---

ADDITIVE MANUFACTURING

Additive Manufacturing of Ceramic-Based Materials: Process Development, Materials, Process Optimization and Applications — Ceramic Direct Ink Writing Processes

Sponsored by: ACerS Basic Science Division, ACerS Engineering Ceramics Division, ACerS Manufacturing Division

Program Organizers: Xuan Song, University of Iowa; Lei Chen, University of Michigan-Dearborn; Yiquan Wu, Alfred University; Paolo Colombo, University of Padova; Rajendra Bordia, Clemson University; Long-Qing Chen, Pennsylvania State University

Wednesday AM | October 1, 2025
C161A | Convention Center

Session Chairs: Rodney Trice, Purdue University; Patrick Snarr, Oak Ridge National Laboratory

---

8:00 AM Invited
Extrusion Manufacturing (Direct Ink Write) of Carbon-Loaded Ultra-High Temperature Ceramic Matrix Composites: David Calvo[1]; Jeffrey Youngblood[1]; *Rodney Trice*[1]; [1]Purdue University

8:30 AM
Plasma Jet Oxidation of Additively Manufactured Monolithic and High Entropy Ultra High Temperature Ceramic Carbides: *Varad Agarwal*[1]; Ambreen Nisar[1]; [1]Florida International Universitry

8:50 AM
Additive Manufacturing of Oxide and Non-Oxide Ceramics for Functional and Structural Applications: *Yirong Lin*[1]; Saqlain Zaman[1]; Anabel Renteria[1]; Jessica Cobos[1]; Fancisco Medina[1]; [1]University of Texas at El Paso

9:10 AM Invited
Advanced Manufacturing and Densification Techniques for Fabricating Ceramic Matrix Composites: *David Mitchell*[1]; [1]University of Central Florida

9:40 AM Invited
Multi-Material Direct Ink Writing for Ceramic Nuclear Fuel Applications: *Patrick Snarr*[1]; Corson Cramer[1]; Chris Petrie[1]; Andrew Nelson[1]; [1]Oak Ridge National Laboratory

10:10 AM Break

10:30 AM
Development of Direct Ink Write Radially Graded Alumina/Zirconia: *Benjamin Lamm*[1]; Beth Armstrong[1]; Corson Cramer[1]; Alex Rogers[1]; Chanaka Kumar[1]; [1]Oak Ridge National Laboratory

10:50 AM
Colloidal Material Design for Additively Manufacturing Optical Glasses: *Joel Destino*[1]; Monisha Murthi[1]; Nicholas Tobin[1]; Jackson Chou[1]; Azriel Carr[1]; Rachel Wayne[1]; Lachlan O'Keefe[1]; Shruti Garapati[1]; [1]Creighton University

11:10 AM
Effect of Dispersants on the Direct Ink Write Printability of SiC Powder in Phenolic Resin for Sintered SiC: *Nadim Hmeidat*[1]; Jordan Wright[1]; Chase Mortensen[2]; Patrick Snarr[1]; Brett Compton[2]; Corson Cramer[1]; [1]Oak Ridge National Laboratory; [2]University of Tennessee, Knoxville

11:30 AM
Development of Models for Densification and Microstructural Evolution of Ceramic Green Bodies Produced by Direct Ink Writing: *Deeksha Kodangal*[1]; Nikhil Dhanankam[2]; Rajendra Bordia[1]; Ulf Schiller[2]; [1]Clemson University; [2]University of Delaware

11:50 AM
Viscosity Adjustment Without Binder: *Jacob Feldbauer*[1]; [1]Oakridge National Laboratory

---

ADDITIVE MANUFACTURING

Additive Manufacturing: Design, Materials, Manufacturing, Challenges and Applications — Additive Manufacturing: Design, Materials, Manufacturing, Challenges and Applications - Session IV

Sponsored by: ACerS Other

Program Organizers: Navin Manjooran, Solve; Gary Pickrell, Virginia Tech

Wednesday AM | October 1, 2025
C151 | Convention Center

Session Chairs: Gary Pickrell, Virginia Tech; Navin Manjooran, Solve

---

8:00 AM Introductory Comments

8:30 AM
Augmenting Standard Thermal Analysis to Evaluate Thermoelastic Reversibility in Additively Manufactured Ti-Rich Classes of NiTi Shape Memory Alloys: *Foster Feni*[1]; Blake Miller[1]; Reginald Hamilton[1]; [1]Pennsylvania State University

8:50 AM
Drift and Repeatability of Aerosol Jet Printing Process Parameters: *Caroline Kromalic*[1]; Aidan Selkirk[1]; Krish Gupta[1]; Anthony DeCarlo[1]; Janet Gbur[1]; [1]Case Western Reserve University

9:10 AM
Effect of Dilution on Fabricated Functionally Graded Materials Compositions: Modelling and Mitigation Strategies Validated Using the Ni-, Fe-, Cu- Alloy System: *Zhening Yang*[1]; Zi-Kui Liu[1]; Allison Beese[1]; [1]Penn State University

9:30 AM
Evolution of Solidification Microstructure in Laser Powder Bed Fusion: Role of Epitaxy, Growth Direction, and Thermal Gradients: *Prosenjit Biswas*[1]; Zhongshu Ren[2]; Tao Sun[3]; Ji Ma[1]; [1]University of Virginia; [2]Brookhaven National Laboratory; [3]Northwestern University

9:50 AM
Exploring Additive Friction Stir Deposition of a Novel 5xxx Aluminum Alloy: *Mason Smith*[1]; Eli Logan[1]; Dayakar Penumadu[1]; Bradley Jared[1]; [1]University of Tennessee

10:10 AM Break

10:20 AM
Fatigue and Microstructural Characterization of Laser Powder Bed Fused CuNi30 Alloy: *Mojtaba Roshan*[1]; MohammadBagher Mahtabi[1]; Zaynab Mahbooba[2]; Ankit Saharan[2]; Meysam Haghshenas[1]; [1]University of Toledo; [2]EOS North America Inc

10:40 AM
Functionally Graded Wear-Resistant Lightweight Steel Manufactured by Laser Powder Bed Fusion Deposition: *Jin-su Park*[1]; Joonoh Moon[1]; Hansol Kwon[2]; Seong-Jun Park[2]; [1]Changwon National University; [2]Korea Institute of Materials Science

11:00 AM
High-Throughput Thermo-Mechanical Testing of Additively Manufactured Materials: *Sean Caufield*[1]; Christopher Hale[2]; John Lewandowski[3]; Vishnu Ramasamy[3]; Zhigang Xu[2]; Bradley Jared[1]; [1]University of Tennessee, Knoxville; [2]North Carolina A&T University; [3]Case Western Reserve University

11:20 AM
Manufacturing of Jet Turbine Engine Exhaust System with Optimized Geometry by Laser Powder Bed Fusion of Cu-Based Alloys: *Melik Kilic*[1]; Ty Barzak[2]; Stefan Moldovan[1]; Constantin Solomon[1]; [1]Youngstown State University; [2]Ursa Major Technologies

11:40 AM Concluding Comments

ADDITIVE MANUFACTURING

Additive Manufacturing: Development of Powders — Powder Engineering, Functionalization & Simulation for AM

Sponsored by: TMS: Additive Manufacturing Committee

Program Organizers: Tim Horn, North Carolina State University; Ian McCue, Northwestern University; Gianna Valentino, University of Maryland; Iver Anderson, Iowa State University Ames Laboratory; Michael Kirka, Oak Ridge National Laboratory

Wednesday AM | October 1, 2025
C160B | Convention Center

Session Chairs: Gianna Valentino, University of Maryland; Haozhi Zhang, North Carolina State University

8:00 AM Invited
Defect-Free PREP Powders for Enhanced Powder Bed Fusion: Reducing Electrostatic Charge and Gas Porosity for Superior Mechanical Performance: *Akihiko Chiba*[1]; [1]Tohoku University

8:40 AM
TiC Surface Functionalization of AA2017 Powders for L-PBF: Influence of TiC Particle Size and Concentration: *Bruna Batistão*[1]; Sergio Amancio-Filho[2]; Piter Gargarella[1]; [1]Federal University of Sao Carlos; [2]Graz University of Technology

9:00 AM
Powder Behavior Simulation for Enhanced Processability and Flowability in Metal Additive Manufacturing: *Hideyuki Kanematsu*[1]; Masahiko Kuwabara[2]; Jeremy Knopp[2]; Tadaomi Fujieda[3]; Takayoshi Nakano[4]; [1]BEL Inc.; [2]Armatus ai; [3]Prometech Software Inc.; [4]Osaka University

9:20 AM
Atomic Layer Deposition (ALD) for Improved Ti64 Feedstocks for Laser Powder Bed Fusion Processes: *Alexandra Koegel*[1]; Chris Gump[1]; Brandon Castro[1]; Joshua Campbell[1]; Tommy Martin[1]; [1]Forge Nano

9:40 AM
Investigating Process Parameters of WA IN740H in PBF-LB: *Sarah Birchall*[1]; Junwon Seo[1]; Anthony Rollett[1]; Bryan Webler[1]; [1]Carnegie Mellon University

10:00 AM
Thermal Processing of Virgin Ti-6Al-4V Powders to Enhance Cold Spray Deposition: *Caroline Dowling*[1]; Kiran Judd[1]; Kyle Tsaknopoulos[1]; Danielle Cote[1]; [1]Worcester Polytechnic Institute

ADDITIVE MANUFACTURING

Additive Manufacturing: Equipment, Instrumentation and In-Situ Process Monitoring — In-Situ Monitoring Methods and Instrumentation

Sponsored by: TMS: Additive Manufacturing Committee

Program Organizers: Samantha Webster, Colorado School of Mines; Jihoon Jeong, Texas A&M University; Benjamin Bevans, University of Oklahoma

Wednesday AM | October 1, 2025
C160A | Convention Center

Session Chairs: Samantha Webster, Colorado School of Mines; Benjamin Bevans, University of Oklahoma; Yash Parikh, EOS of North America, Inc.

8:00 AM Invited
Effect of Beam Shaping on Ratio Pyrometric Temperatures in DED-LB/M: *Lova Chechik*[1]; Karen Schwarzkopf[1]; Michael Schmidt[1]; [1] Friedrich Alexander University

8:30 AM Invited
Thermal Imaging with Off-The-Shelf Color Cameras Yields New Insights to Melt Pool Physics in AM Processes: *Jonathan Malen*[1]; [1]Carnegie Mellon University

9:00 AM
Real-Time Infrared Thermography on Inconel 718 With CT Scan & Surface Roughness Analysis: *Aniqa Lim*[1]; Santosh Rauniyar[1]; Ben Xu[1]; Lori Hathon[1]; Venkat Selvamanickam[1]; Francisco Robles Hernandez[1]; [1]University of Houston

9:20 AM
TOPS: A High-Throughput, Laser-Based Method for Measuring Thermal Conductivity in Additive Manufactured and Other Materials: Jan Mundell[1]; Jeffrey Braun[1]; *Andrew Jones*[1]; [1]Laser Thermal Analysis

9:40 AM
Laser Beam Profiling and High-Temperature Thermal Conductivity Measurements with a Commercial Camera: *Hao-Yuan Cheng*[1]; Alexander Myers[1]; David Deisenroth[2]; Sergey Mekhontsev[2]; Jordan Weaver[2]; Jonathan Malen[1]; [1]Carnegie Mellon University; [2]National Institute of Standards and Technology

10:00 AM Break

10:20 AM Invited
In-Situ Nondestructive Evaluation of Residual Stresses in Directed Energy Deposition: Andrea Camacho-Betancourt[1]; *Iris Rivero*[1]; [1]University of Florida

10:50 AM Invited
Sub-Surface Thermal Measurement in Additive Manufacturing via Machine Learning-Enabled High-Resolution Fiber Optic Sensing: *Rongxuan Wang*[1]; [1]Auburn University

11:20 AM Invited
Ultrasonic Measurements for in Situ Material Characterization in Hybrid Additive Manufacturing: *Luz Sotelo*[1]; Rakeshkumar Karunakaran[2]; Michael Sealy[1]; Joseph Turner[3]; [1]Purdue University; [2]ASM International; [3]University of Nebraska-Lincoln

11:50 AM
Electrical 3D-Printing Process Monitoring Methods: *Deborah Chung*[1]; [1]University at Buffalo, The State University of New York

MATERIALS-ENVIRONMENT INTERACTIONS

Advanced Materials for Harsh Environments — Advanced Materials for Harsh Environments - Session I

Sponsored by: ACerS Other

Program Organizers: Navin Manjooran, Solve; Gary Pickrell, Virginia Tech

Wednesday AM | October 1, 2025
D180 | Convention Center

Session Chairs: Gary Pickrell, Virginia Tech; Navin Manjooran, Solve

8:00 AM Introductory Comments

9:00 AM
Influence of the TiB2 Nanoparticles Addition on Microstructure, Stability and Oxidation Resistance of Ex-Situ Alloy 625+TiB2 Nanocomposites Processed via Suction Casting: *Lukasz Rakoczy*[1]; [1]Agh University of Krakow

9:20 AM
Corrosion Resistance of Alitized Coatings Operating in Harsh Environments of Arsenic-Soda Desulfurization of Coke Chemical Production: *Borys Sereda*[1]; Irina Kruglyak[1]; Dmytro Sereda[1]; Evgeniy Zyuzin[1]; Vitaliy Orel[1]; [1]DSTU

9:40 AM
Understanding the Influence of Impurity Elements on the Localized Corrosion in Recycled Cast Al A356 Alloy: *Mohammad Umar Farooq Khan*[1]; Alphan Berkem[1]; Alan Luo[1]; Jenifer Locke[1]; [1]Ohio State University

10:00 AM Break

10:20 AM
Increasing the Mechanical Properties of the Heat-Resistant Alloy 3- by Treating the Melt with Modifying Complex: Dmytro Tomkin[1]; Oleksii Pedash[1]; Olena Naumyk[2]; *Valeriy Naumyk*[2]; [1]JSC «Motor Sich»; [2]NU "Zaporizhzhia Polytecnic"

10:40 AM
Corrosion Propensity of Polyester-Chromium Nitrate Coated Al7xxx in a Humid Environment: *Joseph Agboola*[1]; Olatunde Sekunowo[1]; Chiamaka Uzuegbu[1]; [1]University of Lagos

11:00 AM
Benefits of Durable and Reliable Borosilicate Glass in the Harsh Environments of the Transportation Sector: *Juliane Brandt-Slowik*[1]; [1]SCHOTT Technical Glass Solutions GmbH

11:20 AM Concluding Comments

PROCESSING AND MANUFACTURING

Advances in Refractory High Entropy Alloys and Ceramics — Alloy Processing and Mechanical Behavior

Sponsored by: TMS: Refractory Metals & Materials Committee, ACerS Basic Science Division

Program Organizers: Mingwei Zhang, University of California, Davis; Arezoo Zare, Washington State University; John Perepezko, University of Wisconsin-Madison; Bai Cui, University of Nebraska Lincoln

Wednesday AM | October 1, 2025
B232 | Convention Center

Session Chair: Dan Thoma, University of Wisconsin-Madison

8:00 AM Invited
Design, Synthesis, and Properties of WTaCrVHf High Entropy Alloys: *Dan Thoma*[1]; Caleb Hatler[1]; Matthew Vigil[1]; Enrique Martinez[2]; Bochuan Sun[2]; Saryu Fensin[3]; Nathan Curtis[1]; Adrien Couet[1]; Osman El Atwani[4]; [1]University of Wisconsin-Madison; [2]Clemson University; [3]Los Alamos National Laboratory; [4]Pacific Northwest National Laboratory

8:30 AM Invited
Advancements and Challenges in Electron Beam Powder Bed Fusion of Refractory Alloys: *Mohsen Taheri Andani*[1]; Enrique Lavernia[1]; [1]Texas A&M University

9:00 AM
Thermal Control During Laser Powder Bed Fusion of Pure Tungsten Through Optimization of Follower Beam: *Daniel Sinclair*[1]; Amaranth Karra[1]; Bryan Ebler[1]; [1]Carnegie Mellon University

9:20 AM
Ultrasonic Atomization of a Hafnium Based Refractory High-Entropy Alloy Ti20Zr20Nb20Hf20Ta20: *Brendon Dodge*[1]; Suyash Niraula[1]; Thomas Berfield[1]; Justin Gillham[1]; [1]University of Louisville

9:40 AM
Tailoring Nb-Ti-Si-B RCCA Microstructures by Modeling and Thermomechanical Processing: *John Titus Barnett*[1]; Maria Quintana[1]; Byron McArthur[2]; Peter Collins[1]; [1]Iowa State University; [2]Air Force Research Laboratory

10:00 AM Break

10:20 AM Invited
Multiphase Design Strategies in Nb–Ti Refractory Alloys with Interstitial Alloying: *Ravit Silverstein*[1]; Nicolo Della Ventura[2]; Florent Mignerot[2]; Julia Purstl[2]; Tresa Pollock[2]; Daniel Gianola[2]; [1]University of Florida; [2]University of California Santa Barbara

10:50 AM Invited
Refractory HEAs: From Nanomechanical Testing to Nanocrystalline Development: *Yu Zou*[1]; [1]University of Toronto

11:20 AM
Tuning Chemical Short-Range Ordering and Mechanical Properties in a Ductile Refractory Multi-Principal-Element Alloy: *Luke Gaydos*[1]; Hailong Huang[2]; Zongyang Lyu[2]; Prashant Singh[2]; Duane Johnson[2]; Ryan Ott[2]; Nicolas Argibay[2]; [1]Iowa State University; [2]Ames National Laboratory

LIGHTWEIGHT ALLOYS

Advances in Titanium Technology — Deformation Mechanisms and Mechanical Properties I

Sponsored by: TMS: Titanium Committee

Program Organizers: G. Babu Viswanathan, Ohio State University; Michael Mills, Ohio State University; Sriram Vijayan, Michigan Technological University; Abhishek Sharma, Worcester Polytechnic Institute; Soumya Nag, Oak Ridge National Laboratory; Thomas Broderick, Federal Aviation Administration; Simon Ringer, University of Sydney; Vasisht Venkatesh, Pratt & Whitney; Paraic O'Kelly, Ohio State University

Wednesday AM | October 1, 2025
C172 | Convention Center

Session Chair: To Be Announced

8:00 AM Invited
Parametrically Upscaled Constitutive Models for Multiscale Analysis of Fatigue Nucleation in Ti Alloys: *Somnath Ghosh*[1]; Tawqeer Tak[1]; Kishore Nair[1]; [1]Johns Hopkins University

8:20 AM Invited
Probabilistic Dwell Fatigue Life Prediction of Microtextured Ti-6Al-4V: *Sushant Jha*[1]; Adam Pilchak[2]; James Larsen[3]; Patrick Golden[3]; Reji John[3]; [1]University of Dayton Research Institute; [2]Pratt and Whitney; [3]US Air Force Research Laboratory

8:40 AM Invited
New Insights into the Cold Dwell Fatigue of Titanium: *Adam Pilchak*[1]; Asa Frye[1]; Michael Gram[1]; Iuliana Cernatescu[1]; David Furrer[1]; [1]Pratt & Whitney

9:00 AM Invited
Placeholder - Influence of Processing and Thermomechanical Loading on Cold Dwell Fatigue Behaviour of Titanium Alloys: [1]Rolls Royce, UK

9:20 AM Invited
Placeholder for Kayla Calvert; [1]TIMET, A PCC Company

9:40 AM Invited
Deformation Substructures and Shear Localization at Basal Twist Boundaries in Fatigued Ti-6Al-4V: Nadib Akram[1]; Baris Yavas[1]; Christopher Collins[2]; Asa Frye[2]; Vasisht Venkatesh[2]; Adam Pilchak[2]; David Furrer[2]; Iuliana Cernatescu[2]; *Mark Aindow*[1]; [1]University of Connecticut; [2]Pratt & Whitney

10:00 AM Break

10:20 AM
Microstructural Modification and Mechanical Property Optimization in Ti-5553 Alloy: Adya Arohi[1]; *Indrani Sen*[1]; [1]Indian Institute of Technology Kharagpur

10:40 AM
Slip Analysis in Ti-6246 Alloy During Dwell Fatigue: *Yukthesh Venkat Surisetti*[1]; Vasisht Venkatesh[2]; Michael Mills[1]; G. Babu Viswanathan[1]; [1]The Ohio State University; [2]Pratt and Whitney

11:00 AM
Understanding the Stochastic Evolution of Microstructural Damage in Aero-Grade Ti-6Al-4V Specimens During Dwell Loading at Ambient Temperature: *Nicholas Armstrong*[1]; Jun Wang[2]; Sitarama Kada[2]; Pavel Cizek[2]; Ross Antoniou[1]; Peter Lynch[2]; [1]Defence Science and Technology Group; [2]Institute for Frontier Materials

11:20 AM
Defect-Driven Fatigue Behavior in LPBF Ti-6Al-4V: Insights From Fractographic Analysis: *Brett Ley*[1]; Austin Ngo[1]; Oluwatumininu Adeeko[1]; Anthony Rollett[2]; Christian Gobert[2]; Jack Beuth[2]; John Lewandowski[1]; [1]Case Western Reserve University; [2]Carnegie Mellon University

11:40 AM
Slip Heterogeneity in a Colony-Structured Titanium Alloy: Planar Versus Wavy Slip Traces: *Yu Zou*[1]; [1]University of Toronto

IRON AND STEEL (FERROUS ALLOYS)

Advances in Understanding of Martensite in Steels III — Martensite in Steels III

Sponsored by: AIST Metallurgy—Processing, Products and Applications Technology Committee

Program Organizers: Viraj Ashok Athavale, Nucor Steel Memphis Inc; Michael Gammage, DEVCOM Army Research Laboratory; Daniel Baker, LIFT

Wednesday AM | October 1, 2025
D281 | Convention Center

Session Chairs: Malavikha Rajivmoorthy, Cleveland-Cliffs Research and Innovation Center; Kapil Dev Sharma, Indian Institute of Technology, Roorkee

8:00 AM
Cooling Rate Effects on Auto-Tempered Martensite: Insights from High-Resolution Microscopy: *Daniel Schrittwieser*[1]; Hannes Pahr[2]; Oleksandr Glushko[1]; Ronald Schnitzer[1]; [1]Montanuniversität Leoben; [2]voestalpine Böhler Welding Austria GmbH

8:20 AM
Dislocation Behavior During Yielding and Strain-Hardening of As-Quenched Martensitic Steel: *Takumi Osanai*[1]; Hirotoyo Nakashima[1]; Eisaku Sakurada[1]; [1]Nippon Steel Corporation

8:40 AM
A Multi-Technique Study on Precipitate Evolution and Mechanical Properties in Q&T Steels: *Kapil Dev Sharma*[1]; Anish Karmakar[1]; [1]Indian Institute of Technology, Roorkee

9:00 AM
Implementation of an Alternative Treatment Route for an HSS M35 Steel in Quenched and Tempered Conditions: *Jesus Campuzano-Chamonica*[1]; Octavio Vázquez-Gómez[1]; Martín Herrejon-Escutia[1]; Pedro Garnica-Gonzalez[1]; Hector Vergara-Hernandez[1]; [1]Tecnológico Nacional de México / I.T. Morelia

9:20 AM
In-Situ Multi-Scale Analysis of Local Deformation Behavior of Lath Martensite in Low-Carbon-Steel: *Shuang Gong*[1]; Junya Inoue[1]; [1]The University of Tokyo

9:40 AM
Effect of Volume Fraction and Mechanical Stability of Retained Austenite on Strain Hardening Behaviour of Fe-0.2C-5Mn-0.8Si-0.4Al Medium Mn Steel: *Kamal Kumar Gupta*[1]; Shiv Brat Singh[1]; [1]Indian Institute of Technology Kharagpur

---

NANOMATERIALS

Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials — Growth and Property Control of Nanomaterials I

Sponsored by: ACerS Basic Science Division, ACerS Electronics Division, ACerS Energy Materials and Systems Division, ACerS Engineering Ceramics Division

Program Organizers: Haitao Zhang, University of North Carolina at Charlotte; Gurpreet Singh, Kansas State University; Kathy Lu, University of Alabama Birmingham; Edward Gorzkowski, Naval Research Laboratory; Michael Naguib, Tulane University; Sanjay Mathur, University of Cologne; Wonmo Kang, Arizona State University; Babak Anasori, Purdue University; Oliver Diwald, Paris Lodron Universitaet Salzburg; Hyunjoo Choi, Kookmin University

Wednesday AM | October 1, 2025
B230 | Convention Center

Session Chairs: Haitao Zhang, University of North Carolina at Charlotte; Hyunjoo Choi , Kookmin University; Sanjay Mathur, University of Cologne

---

8:00 AM Invited
Metal and Metal Oxide Nanoparticles and Quantum Dots for Printed Electronics: Hye-Ryeong Jo[1]; Eunhwa Jeon[1]; Chang Hoon Koh[1]; *Yoon-Bong Hahn*[2]; [1]Electronic Materials & Ink, Co., Ltd.; [2]Jeonbuk National University

8:30 AM Invited
Creating Nanomaterials in Molten Salts: *Yuanbing Mao*[1]; [1]Illinois Institute of Technology

9:00 AM Invited
Challenges in Manufacturing of Composite Powders for Laser Powder Bed Fusion: *Naoyuki Nomura*[1]; Weiwei Zhou[1]; Zhenxing Zhou[1]; Mingqi Dong[1]; [1]Tohoku University

9:30 AM
Systematic Control of Crystallization and Phase Transformation Behavior of Nanoscale NiTi Films Using Seed Layers: Amirhossein Shafieizad[1]; Axel Miranda[1]; *Jagannathan Rajagopalan*[1]; [1]Arizona State University

9:50 AM
Utilizing Ternary Halide Salts as a Mechanistic Probe To Explore the Synergy of Cl and Br Ions in the Polyol Synthesis of Silver Nanocubes: *Felix Messick*[1]; Kathryn MacIntosh[1]; Robert Rioux[1]; [1]Pennsylvania State University

10:10 AM Break

10:30 AM
The Nanofabrication and Unique Properties of Diamond Nanocone Arrays with High Gaseous Sensitivity: *Changzhi Gu*[1]; [1]Chinese Academy of Sciences

10:50 AM
Shapeshifting and Self-Regenerating Supported Metal Catalysts for Effective CO Conversion: Filippo Colombo[1]; Anastasios Tsiotsias[2]; Benjamin Rudolph[1]; Maria Goula[2]; *Simone Mascotto*[3]; [1]University of Hamburg; [2]University of Western Macedonia; [3]University of Koblenz

11:10 AM
Self-Healing, Transparent, and Superhydrophobic Coating with Dual Self-Cleaning Functionality for Enhanced PV Panel Performance: *Sara Lakhouil*[1]; [1]UM6P

11:30 AM
Insights into the Effects of Physico-Chemical Parameters in Tailoring Zinc Stannate Nanostructures for UV Protection and Gas Barrier Properties: *Bharti Rana*[1]; S. Wazed Ali[1]; Mangala Joshi[1]; [1]Indian Institute of Technology Delhi

---

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Energy Materials for Sustainable Development — Battery and Storage V / Photovoltaics and Photocatalysis

Sponsored by: ACerS Energy Materials and Systems Division

Program Organizers: Sepideh Akhbarifar, The Catholic University of America -Vitreous State Lab; Jianhua Tong, Clemson University; Yang Bai, University of Oulu; Eva Hemmer, University of Ottawa; Charmayne Lonergan, Missouri University of Science and Technology; Armin Feldhoff, Leibniz University Hannover; Takayoshi Katase, Institute of Science Tokyo; Bed Poudel, Pennsylvania State University; Ekaterina Pomerantseva, Drexel University; Kai He, University of California, Irvine

Wednesday AM | October 1, 2025
B234 | Convention Center

Session Chairs: Michael Naguib, Tulane University; Jianhua Tong, Clemson University

---

8:00 AM Invited
Mitigating the Impact of Mechanical Vibration on the Storage Performance of High Ni Based Lithium-Ion Batteries: Naresh Vangapally[1]; Morekonda Ganesh Babu Karthick Babu[1]; Lee Heow Pueh[1]; *Palani Balaya*[1]; [1]National University of Singapore

8:30 AM
Extraordinary Inductive and Capacitive Discharge/Charge Behavior of Carbon Fiber, and the Enabled Nonstop Discharge of a Fiber Assembly: *Deborah Chung*[1]; Sathwika Chittluri[1]; [1]University at Buffalo, The State University of New York

8:50 AM Invited
Solution-Mediated Solid-Solid Transformation Reactions for Electrochromic Materials: *Xuefei Li*[1]; [1]Georgia State University

9:20 AM
A Composite Anode of Silicon Oxycarbide and Reduced Graphene Oxide for Lithium-Ion Batteries: *Dillip Panda*[1]; Nawraj Sapkota[1]; Gangadhar Jella[2]; Ravindran Sujith[2]; Apparao Rao[1]; Rajendra Bordia[1]; [1]Clemson University; [2]BITS Hyderabad

9:40 AM
A Statistical Design of Experiments and Structural Characterization of ITO for Perovskite Solar Cells.: *Firdous Ali*[1]; Subhadra Gupta[1]; [1]The University of Alabama

10:00 AM Break

10:20 AM
Crystallization Control and Green Fabrication Pathways for Next-Generation Perovskite Solar Cells: *Cyril Chu Fubin Kumachang*[1]; Julie Tring[1]; Brittlee Reese[1]; Mac Fitzgerald[1]; Tawanda J. Zimudzi[1]; Ivy M. Asuo[1]; Nutifafa Y. Doumon[1]; [1]Pennsylvania State University

10:40 AM
Optimal Co-Doping of Ti and Co in CaMnO for Solar Thermochemical Fuel Production: *Ting Shen*[1]; Jianhua Tong[1]; Dina Besisa[2]; Yasser Ahmed[2]; Rajendra Bordia[1]; [1]Clemson University; [2]Central Metallurgical Research and Development Institute

11:00 AM
Polythiophene Based P-N Junction Solar Cells: *Geethanath Duggiralla*[1]; Dianlu Jiang[1]; [1]California State University Los Angeles

11:20 AM
Silver Bismuth Iodide (Ag2BiI5) Screen-Printed Perovskite Carbon Solar Cells: *Varshika Puthan Veedu Sasidharan*[1]; Wu Qinjie[2]; Priyanka Kajal[2]; Paul Erinjeri Jogi[2]; Darrell Jun Jie Tay[2]; Nripan Mathews[2]; [1]Universidad Autónoma de Nuevo León; [2]Nanyang Technological University

11:40 AM
The Photocatalytic Properties of Sr-Excess SrTiO3: *Sipei Li*[1]; Paul Salvador[1]; Gregory Rohrer[1]; [1]Carnegie Mellon University

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Energy Materials for Sustainable Development — Thermoelectrics V/ Energy Harvesting, System and Application

Sponsored by: ACerS Energy Materials and Systems Division

Program Organizers: Sepideh Akhbarifar, The Catholic University of America -Vitreous State Lab; Jianhua Tong, Clemson University; Yang Bai, University of Oulu; Eva Hemmer, University of Ottawa; Charmayne Lonergan, Missouri University of Science and Technology; Armin Feldhoff, Leibniz University Hannover; Takayoshi Katase, Institute of Science Tokyo; Bed Poudel, Pennsylvania State University; Ekaterina Pomerantseva, Drexel University; Kai He, University of California, Irvine

Wednesday AM | October 1, 2025
B235 | Convention Center

Session Chairs: Sepideh Akhbarifar, The Catholic University of America -Vitreous State Lab; Yang Bai, University of Oulu

8:00 AM Invited
Predicting the Thermoelectric Figure of Merit by Machine Learning: *Holger Kleinke*[1]; [1]University of Waterloo

8:30 AM Invited
Machine Learning Pathways to High Thermoelectric Figure-of-Merit: *Joseph Poon*[1]; C. T. Ma[1]; Wenjie Li[2]; Bed Poudel[2]; [1]University of Virginia; [2]Pennsylvania State University

9:00 AM Invited
Microwave Processing of Thermelectric Materials: *Amin Nozariasbmarz*[1]; [1]Rowan University

9:30 AM Invited
Thermal Conductivity Imaging to Advance Microstructure Engineering in Thermoelectric and Energy Materials: *Eleonora Isotta*[1]; [1]Max Planck Institute Susmat

10:00 AM Break

10:20 AM Invited
Solid-State Electrochemical Thermal Switches Using YSZ Solid Electrolyte: *Ahrong Jeong*[1]; Hiromichi Ohta[1]; [1]Hokkaido University

10:50 AM
Harvesting Indoor Lights for Energy Generation via Photothermal Transparent Thin Films and PVs: Anudeep Katepalli[1]; Meher Saketh Gandharapu[1]; Thiraj Mohankumar[1]; Anton Harfmann[1]; Mathias Bonmarin[1]; John Krupczak[1]; *Donglu Shi*[1]; [1]University of Cincinnati

11:10 AM
Single- and Multi-Component Metal Composite Nano-Catalysts for Enhanced Solid Oxide Fuel Cell Operation in Hydrocarbon Fuels: *Saad Waseem*[1]; Edward Sabolsky[1]; Katarzyna Sabolsky[1]; Seunghyuck Hong[2]; Mingfei Liu[2]; Richard Hart[3]; [1]West Virginia University; [2]GE Aerospace; [3]GE Vernova

11:30 AM
True Binary Ferroelectric WO3 Nanoparticles and It's Polaron Driven Opto-Electronic Interaction: *Mohammad Mahafuzur Rahaman*[1]; Jose Flores[2]; Mohamed Yaseen Noor[1]; Md Mohsinur Rahman Adnan[1]; Alex Blackston[1]; Enam Chowdhury[1]; Roberto Myers[1]; Michael Newburger[2]; Pelagia-Irene (Perena) Gouma[1]; [1]The Ohio State University; [2]Air Force Research Lab, Wright Patterson Air Force

CERAMIC AND GLASS MATERIALS

Engineering Ceramics: Microstructure-Property-Performance Relations and Applications — Advanced Processing Technology / Corrosion Behavior of Ceramics / Modeling and Simulation

Sponsored by: ACerS Engineering Ceramics Division

Program Organizers: Junichi Tatami, Yokohama National University; Young-Wook Kim, WORLDEX Industry & Trading Co., Ltd.; Hua-Tay Lin, Guangdong University of Technology; Michael Halbig, NASA Glenn Research Center

Wednesday AM | October 1, 2025
B240/241 | Convention Center

Session Chair: To Be Announced

8:00 AM
Mechanistic Effect of Ytterbium Monosilicate on the Microstructural Evolution of Ytterbium Disilicate Coatings in Extreme Environments: *Ebenezer Owusu*[1]; Acacio Romero[2]; Oriol Gavalda-Diaz[3]; K. Voisey[1]; [1]University of Nottingham; [2]Tecnalia; [3]Imperial College London

8:20 AM
Design of an Environmentally Safe and Sustainable Process to Synthesize Compositionally Complex Cubic Spinel Ferrites: B. A. Puente-Urbina[1]; G. F. Hurtado-López[1]; Antonio Fuentes[2]; F. J. Rodríguez-Varela[2]; F. J. Rodríguez-González[1]; Eric C. Eric C. O'Quinn[3]; Maik Lang[4]3 *Sagrario M. Montemayor*[1]; [1]Centro de Investigación en Química Aplicada; [2]CINVESTAV del IPN; [3]University of Tennessee

8:40 AM
Hybrid Microwave Sintering of Electrolytes for SOEC/SOFC Applications: *Tugrul Yumak*[1]; Mohan Thorat[1]; Ansan Pokharel[1]; Javier Mena[1]; Katarzyna Sabolsky[1]; Shavinka Jayasekera[1]; Terence Musho[1]; Edward Sabolsky[1]; [1]West Virginia University

9:00 AM
Finite Element Modeling of Microwave-Assisted Calcination of SOEC Perovskite Precursor Powders: *Hongwei Liu*[1]; Ansan Pokharel[1]; Logan Proud[1]; Brandon Robinson[1]; Jianli Hu[1]; Katarzyna Sabolsky[1]; Javier Mena[1]; Tugrul Yumak[1]; Ashley Daniszewski[2]; Christina Wildfire[2]; Edward Sabolsky[1]; Terence Musho[1]; [1]West Virginia University; [2]National Energy Technology Laboratory

9:20 AM
Firing Behavior of 18th Century European Porcelains: *Grace Dunham*[1]; Thomas Lam[2]; William Carty[1]; [1]Alfred University; [2]MCI

9:40 AM
Measurement of Glaze Thermal Expansion via Crazing: *Michael Carson*[1]; William Carty[2]; Hyojin Lee[2]; Grace Dunham[2]; [1]Amaco; [2]Alfred University

10:00 AM Break

10:20 AM
Development of a Li-Corrosion Resistant Coating for Mullite-Cordierite-Based Refractory: *Hyojin Lee*[1]; William Carty[1]; [1]Alfred University

10:40 AM
Effect of SiO_2 Content on High-Temperature Phase Transition and Physical Properties in Calcium Aluminate Cement: *Sang-Min Hong*[1]; Jong-Won Kim[1]; Ha-Jin Gu[1]; Young-Jae Kim[1]; Ah-Hyeon Park[1]; Eun-Hee Kim[1]; Yong-Hyuk Kim[2]; Sang-Bae Choi[2]; Sang-Chae Jeon[1]; [1]Changwon National University; [2]Chosun Refractories Co., Ltd.

11:00 AM
Reduction Behavior of Mullite/Andalusite-Based Refractories Under Hydrogen Atmosphere and the Effect of Crystalline SiO_2 on Mechanical Strength: Sung-Hyun Kim[1]; Jong-Won Woo[1]; *Jong-Won Kim*[1]; Sang-Min Hong[1]; Eun-Hee Kim[1]; Rae-Hyeong Park[2]; Sang-Bae Choi[2]; Sang-Chae Jeon[1]; [1]Changwon National University; [2]Chosun Refractories Co., Ltd

11:20 AM
Breaking the Charge Neutrality Boundary in Perovskite Using the PyCALPHAD Approach: *Adam Shenk*[1]; Ethan Cummings[1]; Samuel Krimmel[1]; Richard Otis[2]; Yu Zhong[1]; [1]Worcester Polytechnic Institute; [2]Proteus Space, Inc.

FUNDAMENTALS AND CHARACTERIZATION

High-Entropy Materials: Solid Solutions, Intermetallics, Ceramics, Functional Materials and Beyond VI — Experiments: Alloy II

Sponsored by: TMS: Alloy Phases Committee, ACerS Basic Science Division

Program Organizers: Shuozhi Xu, University of Oklahoma; Yiquan Wu, Alfred University; Yu Zhong, Worcester Polytechnic Institute; Michael Gao, National Energy Technology Laboratory; Xingbo Liu, West Virginia University; Peter Liaw, University of Tennessee; Jian Luo, University of California, San Diego; Mitra Taheri, Johns Hopkins University; Amy Clarke, Los Alamos National Laboratory

Wednesday AM | October 1, 2025
C170 | Convention Center

Session Chairs: Yu Zou, University of Toronto; Lia Amalia, University of Tennessee

8:00 AM Invited
Diffraction-Guided Understanding of Materials Processing in High-Entropy Alloys: *Fan Zhang*[1]; [1]National Institute of Standards and Technology

8:30 AM Invited
Direct Visualization of the Existence of Surface Local Chemical Order in a High Entropy CoCrFeMnNi Alloy: *Teyu Chien*[1]; [1]University of Wyoming

9:00 AM Invited
Effects of Al Addition in High-Entropy Alloys on the Structure and Properties: *Fuxiang Zhang*[1]; [1]Songshan Lake Materials Laboratory

9:30 AM
The Role of Precipitate Size in Cryogenic Deformation Mechanisms and Mechanical Properties of the L12-Strengthened Ferrous Alloy: *Gwanghyeon Moon*[1]; Jinkyung Kim[1]; [1]Hanyang University

9:50 AM Break

10:10 AM Invited
Recent Progress on Short-Range Atomic Ordering in High-Component Materials: *Peter Liaw*[1]; Rui Feng[1]; Jian-Min Zuo[2]; Lia Amalia[1]; [1]University of Tennessee; [2]University of Illinois Urbana-Champaign

10:40 AM Invited
Microstructure and Mechanical Properties of TiVNbMo Alloys: *Chen Liu*[1]; [1]Harbin Institute of Technology

11:10 AM
Systematic Investigation on the Mechanical and Deformation behavior of Additively Manufactured NiCoCr Alloy Under Various Environments: *Thaer Syam*[1]; Adnan Khan[1]; Imroj Syed[1]; Ibrahim Karaman[1]; Bilal Mansoor[1]; [1]Texas A&M University

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Hybrid Organic-Inorganic Materials for Alternative Energy — 2 D Materials and Computational Design of Hybrid Organic-Inorganic Materials for Alternative Energy

Program Organizers: Andrei Jitianu, Lehman College, City University of New York; Lisa Klein, Rutgers University; Lia Stanciu, Purdue University; Mihaela Jitianu, William Paterson University; Alessandro Martucci, University of Padova

Wednesday AM | October 1, 2025
B246 | Convention Center

Session Chair: Andrei Jitianu, Lehman College of the City University of New York

8:00 AM Invited
Thermal and Anodic Oxidation Routes to Scalable Metal Oxide Nanostructures and Their Graphene-Based Hybrids for Photoreduction of Cr(VI): *Wai Kian Tan*[1]; Go Kawamura[1]; Zainovia Lockman[2]; Hiroyuki Muto[1]; Atsunori Matsuda[1]; [1]Toyohashi University of Technology; [2]Universiti Sains Malaysia

8:30 AM Invited
Tuning Chemistry and Morphology in Graphene-Supported Hybrids for Environmental and Energy Applications: *Hong Huang*[1]; Zhuo Yao[2]; [1]Wright State University; [2]University of Science and Technology Liaoning

9:00 AM Invited
Control of 2D MXenes and their Hybrids for Hydrogen Evolution Electrocatalysis: Anupma Thakur[1]; *Babak Anasori*[1]; [1]Purdue University

9:30 AM Invited
MXenes Hybrids for Energy Applications: *Michael Naguib*[1]; [1]Tulane University

10:00 AM Break

10:20 AM Invited
Significance of IR-Observable Background Shift in Organics/TiO Thin Films in Dye-Sensitized Solar Cell, Mg Battery, and Photocatalysis: Steven Chuang[1]; *Yuli Marcela Henao Hoyos*[1]; [1]The University of Akron

10:50 AM Invited
Harnessing Machine Learning and Molecular Design to Advance Low-Dimensional Organic–Inorganic Lead Halides: *Yiying Wu*[1]; [1]Ohio State University

11:20 AM Invited
Computational Discovery of New Materials for Singlet Fission in the Solid State: *Noa Marom*[1]; [1]Carnegie Mellon University

PROCESSING AND MANUFACTURING

Lightweight Composites, Materials & Alloys — Microstructure, Processing and Properties

Sponsored by: TMS: Materials Characterization Committee

Program Organizers: Ramasis Goswami, Naval Research Laboratory; Tanjore Jayaraman, United States Air Force Academy; Ramachandra Canumalla, Weldaloy Specialty Forgings; Aashish Rohatgi, Pacific Northwest National Laboratory

Wednesday AM | October 1, 2025
B231 | Convention Center

Session Chair: Ramasis Goswami, Naval Research Laboratory

8:00 AM
A Preliminary Investigation Comparing Functioning and Defective Injection-Molded, Glass-Reinforced PET Plastic Receptacles Exhibiting Installation Cracking: *John Bridge*[1]; [1]University of Washington

8:20 AM
Microstructural Refinement Using Ultrasonic Processing of Copper-Chromium-Zirconium Alloy: Kate Rader[1]; *Robert Meyer*[2]; Jaime George[1]; Aashish Rohatgi[1]; Ram Canumalla[2]; [1]Pacific Northwest National Laboratory; [2]Weldaloy Specialty Forgings

8:50 AM
Investigating Filler Wire Contributions to Porosity and Strength in Al 6061-T6 Welds: *Tinku Kumar*[1]; Hariharan V S[1]; [1]Lincoln Electric Company India Private Limited

9:10 AM
Integrating Data-Driven Analyses and Selection of Lightweight Manganite-Based Magnetocaloric Materials for Ambient Temperature Magnetic Refrigeration: *Tanjore Jayaraman*[1]; [1]United States Air Force Academy

9:40 AM
Understanding The Role of Alloying on Low Cycle Fatigue Behavior in Mg Alloys: *Justin Smith*[1]; Aeriel Murphy-Leonard[1]; [1]The Ohio State University

10:00 AM Break

10:20 AM Invited
Thermomechanical Fatigue Behavior and Microstructure of Casting Aluminum Alloy Used for Engine Components: *Yi Liu*[1]; Qigui Wang[1]; Jason Coryell[1]; [1]General Motors

10:50 AM
Anisotropic Continuum Damage Mechanics Based-Fracture Surface: Application to Aluminum Alloy 6DR1: *Ossama Abou Ali Modad*[1]; Georges Ayoub[1]; [1]University of Michigan-Dearborn

11:10 AM
Evolving Anisotropy-Based Plasticity Model for Lightweight Alloys at Medium Temperature: *Seonghwan Choi*[1]; Kyungmun Min[1]; Hyukjong Bong[1]; [1]Korea Institute of Materials Science

CERAMIC AND GLASS MATERIALS

Manufacturing and Processing of Advanced Ceramic Materials — Advances in Ceramic Processing II: Applications

Sponsored by: ACerS Manufacturing Division

Program Organizers: Bai Cui, University of Nebraska Lincoln; James Hemrick, Oak Ridge National Laboratory; Eric Faierson, Iowa State University; Keith DeCarlo, Blasch Precision Ceramics

Wednesday AM | October 1, 2025
B142/143 | Convention Center

Session Chairs: Fei Peng, Clemson University; Surojit Gupta, University of North Dakota

8:00 AM Invited
Direct-Laser-Writing of Transparent Silica and Silica-Titania Glasses: Siddhartha Sarkar[1]; Nicholas Tomlinson[1]; Rajendra Bordia[1]; Jianhua Tong[1]; Shunyu Liu[1]; Liping Huang[2]; Hai Xiao[1]; *Fei Peng*[1]; [1]Clemson University; [2]Rensselaer Polytechnic Institute

8:30 AM Invited
Pulsed Neutron Characterization of Additively Manufactured Annular UO2 Fuels: *Cheng Sun*[1]; Sven Vogel[2]; Patrick Moo[3]; Donald Brown[2]; Bjorn Clausen[2]; [1]Clemson University; [2]Los Alamos National Laboratory; [3]Far West Fuels

8:50 AM
Sol-Gel Synthesis of Titanium Diboride Powders for Extreme Applications: *Isaac Ntiamoah*[1]; Carolina Tallon[1]; [1]Virginia Polytechnic Institute and State University

9:10 AM
Thermal Stability and Morphological Transformation of MXene/SiOC Interface: An In-Situ HRTEM Study: *Mubina Shaik*[1]; Tim Pieshkov[2]; Abhijit Biswas[2]; Ajayan Pulickel[2]; Kathy Lu[1]; [1]University of Alabama at Birmingham; [2]Rice University

9:30 AM Invited
Design and Development of Novel Ceramics for Structural Applications: *Surojit Gupta*[1]; [1]University of North Dakota

10:00 AM Break

10:20 AM Invited
The Industrial Practice of Joining Ceramics to Metals Using Ultra-Active Brazing Filler Metals: Technical Solutions and Future Work: *Alexander Shapiro*[1]; [1]Titanium Brazing, Inc.

10:50 AM
Superior Fracture Toughness of ZrO2/Al2O3 Nano-Nano Composite With Eutectic Composition: *Manshi Ohyanagi*[1]; Yuto Koyanagi[1]; Shiryu Fujinaka[1]; Kenshiro Shirai[1]; Takahito Imai[1]; Yoshihiro Shimizu[1]; [1]Ryukoku University

11:10 AM
Ni-Zn Ferrite/Metal Nanocomposites Synthesized by Hydrogen Reduction Techniques: *Zisong Wang*[1]; [1]University of Pittsburgh

11:30 AM
Influence of B4C Content and Particle Size on the Mechanical Properties of Al2O3-B4C Composites: *Nazeer Mohammed*[1]; Ajit Kumar Naik[1]; Prasad D.K.V.D[1]; Lava Kumar Pillari[2]; Lukas Bichler[2]; Tapas Laha[1]; Siddhartha Roy[1]; [1]IIT Kharagpur; [2]The University of British Columbia-Okanagan

SPECIAL TOPICS

Materials and Manufacturing in Low Earth Orbit (and Beyond) — Welding in Low Earth Orbit- History and Planned Experiments

Sponsored by: TMS: Solidification Committee

Program Organizers: David Williams, Ohio State University; Alan Luo, Ohio State University; Glenn Daehn, Ohio State University; Antonio Ramirez, The Ohio State University; Boyd Panton, Ohio State University; Nathan Ames, Ohio State University; Ken Savin, REdwire Space; Jonathan Volk, Voyager Space

Wednesday AM | October 1, 2025
C161B | Convention Center

Session Chair: Antonio Ramirez, Ohio State University

9:00 AM Introductory Comments

9:10 AM
Laser Beam Welding in Space – From Science to Technology Development: *Antonio Ramirez*[1]; Boyd Panton[1]; Ali Nassiri[1]; Kaue Riffel[1]; Eugene Choi[1]; Aaron Brimmer[1]; Will McAuley[1]; [1]Ohio State University

9:30 AM
Instrumentation for the Testing of Laser Beam Welding Under Simulated Space Conditions via Parabolic Flight: *Aaron Brimmer*[1]; Eugene Choi[1]; Will McAuley[1]; Kaue Riffel[1]; Boyd Panton[1]; Antonio Ramirez[1]; [1]The Ohio State University

9:50 AM
Challenges in Laser Welding for Space: Metal Vapor, Lens Fogging, and Plume Effects: *Eugene Choi*[1]; Boyd Panton[1]; Antonio Ramirez[1]; Kaue Riffel[1]; Aaron Brimmer[1]; Will McAuley[1]; [1]The Ohio State University

10:10 AM Break

10:30 AM
Porosity Formation and Microstructure Characterization in Pulsed LBW of 316L SS Under Space Conditions and Different Levels of Gravity: *Kaue Riffel*[1]; Eugene Choi[1]; Aaron Brimmer[1]; Will McAuley[1]; Boyd Panton[1]; Ali Nassiri[1]; Antonio Ramirez[1]; [1]Ohio State University

10:50 AM
Numerical Modeling of Laser Beam Welding for In-Space Applications: Insights From Parabolic Flight Experiments: *Will McAuley*[1]; Aaron Brimmer[1]; Eugene Choi[1]; Kaue Riffel[1]; Ali Nassiri[1]; Boyd Panton[1]; Antonio Ramirez[1]; [1]The Ohio State University

11:10 AM Concluding Comments

ARTIFICIAL INTELLIGENCE

Materials Processing and Fundamental Understanding Based on Machine Learning and Data Informatics — Materials Processing and Fundamental Understanding Based on Machine Learning and Data Informatics I

Sponsored by: ACerS Basic Science Division, TMS: Computational Materials Science and Engineering Committee

Program Organizers: Fei Peng, Clemson University; Kathy Lu, University of Alabama Birmingham; Dilpuneet Aidhy, Clemson University; Yi Je Cho, Sunchon National University

Wednesday AM | October 1, 2025
D283 | Convention Center

Session Chair: To Be Announced

8:00 AM Invited
Is AI/ML All We Need for Autonomous Experiments: *Yongtao Liu*[1]; [1]Oak Ridge National Laboratory

8:30 AM
The Emergence of Machine Learning and Deep Learning Based Image Segmentation for Powder and Particle Characterization in Materials: *Andy Holwell*[1]; [1]Carl Zeiss Microscopy LLC

8:50 AM
Designing Materials and Processes for Power Generation Using Advanced AI Tools Such as Graph Neural Networks: *Vyacheslav Romanov*[1]; [1]DOE-NETL

9:10 AM
The Applications of Generative Adversarial Networks (GANs) on the Prediction of the Material's Microstructure: Ningxuan Wen[1]; Rajendra Bordia[1]; Jianhua Tong[1]; Dongsheng Li[2]; Hai Xiao[1]; *Fei Peng*[1]; [1]Clemson University; [2]Advanced Manufacturing LLC

9:30 AM
Optimizing Training Sets for Deep Learning-Based Platinum Particle Analysis for Nuclear Power Corrosion Prevention: *Txai Sibley*[1]; Joe Giannelli[2]; Cem Topbasi[2]; Elizabeth Holm[2]; Kevin Field[2]; [1]University of Michigan; [2]EPRI

9:50 AM Break

10:10 AM Invited
Machine Learning Disordered Materials Properties: Hengrui Zhang[1]; Jie Chen[1]; James Rondinelli[1]; *Wei Chen*[1]; [1]Northwestern University

10:40 AM
Preprocessing of Inconsistent Creep Data Collected from a Literature Survey to Provide Reliable and Consistent Creep Life Prediction: *Taejoo Lee*[1]; Chang-Seok Oh[2]; Yoon Suk Choi[1]; [1]Pusan National University; [2]Korea Institute of Materals Science

11:00 AM
Imbalance Learning, Inverse Design and Transfer Learning of High Entropy Alloys: *Yoon Suk Choi*[1]; Libin Zhang[1]; Dae-Geun Nam[2]; [1]Pusan National University; [2]Korea Institute of Industrial Technology

MATERIALS-ENVIRONMENT INTERACTIONS

Materials Under Extreme Environment — Materials Under Extreme Environment I

Sponsored by: ACerS Engineering Ceramics Division, TMS: Mechanical Behavior of Materials Committee, TMS: Computational Materials Science and Engineering Committee

Program Organizers: Robert Slapikas, DEVCOM Army Research Laboratory; Anindya Ghoshal, DEVCOM Army Research Laboratory; Douglas Wolfe, Pennsylvania State University

Wednesday AM | October 1, 2025
D181 | Convention Center

Session Chairs: Robert Slapikas, DEVCOM Army Research Laboratory; Anindya Ghoshal, DEVCOM Army Research Laboratory; Douglas Wolfe, The Pennsylvania State University

8:00 AM Introductory Comments

8:05 AM
A High-Throughput Test Methodology for Determining the Hugoniot Elastic Limit: *Arjun Sreedhar Sreepadmam*[1]; K T Ramesh[1]; [1]Johns Hopkins University

8:25 AM
Coupled Extremes in Nanoindentation: Temperature and Strain Rate Effects in Structural Materials: *Kevin Schmalbach*[1]; Eric Hintsala[1]; Sanjit Bhowmick[1]; [1]Bruker Nano

8:45 AM
Design of Oxidation Resistant HfC-TaC Ultra-High Temperature Ceramics Based on Thermodynamic and Kinetic Modeling of the Hf-Ta-C-O System: *Rahim Zaman*[1]; Elizabeth Opila[1]; Bi-Cheng Zhou[1]; [1]University of Virginia

9:05 AM
Impact of Microstructure on the Oxidation Resistance of Silicon Carbide Manufactured by Two Step Sintering: *Cooper Howard*[1]; [1]Alfred University

9:25 AM
Microstructural Evolution and Strength of 3D-Printed Oxide-Dispersion and Precipitate Strengthened Superalloys: *Andreas Bezold*[1]; Subham Chattoraj[1]; Kojo Benefo[1]; Calvin Stewart[1]; Timothy Smith[2]; Michael Mills[1]; [1]The Ohio State University; [2]NASA Glenn Research Center

9:45 AM
High Temperature Ablation of Pressureless Sintered HfC-SiC-TaC Ceramics: *Naomy Serrano*[1]; Lucia Ruiz[1]; Caden Doolittle[1]; David Burk[1]; Anindya Ghoshal[2]; Scott Walck[2]; Lionel Vargas-Gonnzalez[2]; Rick Reidy[1]; Marcus Young[1]; Andrey Voevodin[1]; Samir Aouadi[1]; [1]University of North Texas; [2]DEVCOM Army Research Laboratory

10:05 AM Break

10:25 AM
Developing Advanced In-Situ Microscopy Techniques for Testing Materials Under Coupled Extremes: *Elijah Davis*[1]; Khalid Hattar[1]; [1]University of Tennessee Knoxville

10:45 AM
Development of Improved Titanium Coatings Based on Thermodynamic Modeling and Microstructure Studies: Borys Sereda[1]; *Irina Kruglyak*[1]; Dmytro Sereda[1]; Dmytro Kiforuk[1]; Ruslan Krivko[1]; [1]DSTU

FUNDAMENTALS AND CHARACTERIZATION

Microstructural Control in Materials Processing: Role of Phase Transformation Pathways — Microstructural Control in Materials Processing: Role of Phase Transformation Pathways I

Sponsored by: TMS: Phase Transformations Committee

Program Organizers: Bharat Gwalani, North Carolina State University; Soumya Nag, Oak Ridge National Laboratory; Abhishek Sharma, Worcester Polytechnic Institute; Sriswaroop Dasari, University of Texas at El Paso; Ashley Paz y Puente, University of Cincinnati; Paul Gibbs, Los Alamos National Laboratory; Sophie Primig, University of New South Wales

Wednesday AM | October 1, 2025
C162B | Convention Center

Session Chair: To Be Announced

8:00 AM Invited
Cold-Rolling-Induced Novel Sub-Grain Structures in NiTi SMAs Enabling Unique Transformation Pathways and Mechanical Behavior: Qianglong Liang[1]; Dong Wang[1]; Michael Mills[2]; *Yunzhi Wang*[2]; [1]Xi'an Jiaotong University; [2]Ohio State University

8:30 AM
On the Balance Between Strengthening Effect and Shape Memory Properties in NiTiHf-Based Alloys With Different Al Additions and Complex Precipitation Structure: *Flavia Gallo*[1]; Eitan Hershkovitz[1]; Soumya Bandyopadhyay[1]; Michael Tonks[1]; Honggyu Kim[1]; Michele Manuel[2]; [1]University of Florida; [2]University of Pittsburgh

9:00 AM
Effect of Short Annealing Treatments on the Microstructure of Superelastic Nitinol Sheets: *Aref Golsorkhi*[1]; Dinc Erdeniz[1]; [1]University of Cincinnati

9:20 AM
High-Throughput Quantification of Recrystallization Parameters for Alloy Development: Finn Birchall[1]; *Catherine Bishop*[1]; [1]University of Canterbury

9:50 AM Break

10:10 AM Invited
Advancing Nuclear Material Processing via Friction Stir Consolidation and Layer Deposition: *Subhashish Meher*[1]; Tianhao Wang[1]; Mohan Sai Kiran Kumar Yadav Nartu[1]; David Garcia[1]; Jorge dos Santos[1]; Isabella van Rooyen[1]; [1]Pacific Northwest National Laboratory

10:40 AM
Thermo-Mechanical Processing for Significant Strength Improvements in a NiCoCr-Based Alloy Using a Multi-Length Scale Strengthening Approach: *Martin Detrois*[1]; Chang-Yu Hung[1]; Milan Heczko[2]; Chenyang Li[3]; Dallin Barton[4]; Wei Chen[3]; Arun Devaraj[4]; Michael Mills[2]; Paul Jablonski[1]; Stoichko Antonov[1]; [1]National Energy Technology Laboratory; [2]The Ohio State University; [3]University of Buffalo; [4]Pacific Northwest National Laboratory

11:10 AM Invited
Microstructural Control Strategies to Slow Sensitization Rates in 5XXX Series Aluminum Alloys: Likun Sun[1]; Gajanan Jayade[1]; *Matthew Steiner*[1]; [1]University of Cincinnati

11:40 AM
Effect of Hot Strength and Alloying on Additive Friction Stir Deposition: *Merris Corinne Wells*[1]; Thomas Dorin[1]; [1]Deakin University Institute for Frontier Materials

BIOMATERIALS

Next Generation Biomaterials — Next Generation Biomaterials V

Sponsored by: ACerS Bioceramics Division, TMS: Biomaterials Committee

Program Organizers: Roger Narayan, University of North Carolina; Tanveer Tabish, University of Oxford

Wednesday AM | October 1, 2025
C171 | Convention Center

Session Chairs: Janet Gbur, Case Western Reserve University; Antonia Ressler, Tampere University

8:00 AM Invited
Design, Fabrication, and Testing of a Novel High-Density, In-Line Connector for Neuroprosthetics: *Janet Gbur*[1]; Douglas Shire[1]; [1]Louis Stokes Cleveland VA Medical Center

8:20 AM Invited
Deciphering the Role of Microstructure in Governing Corrosion and Aluminum Release in Mg-Al Alloys: *Sreenivas Raguraman*[1]; Mitchell Connon[2]; Camryn Byrum[1]; Rohit Berlia[1]; Veronica Ivanovskaya[1]; Beril Ulugun[1]; Suhas Prameela[3]; Roger Guillory[2]; Timothy Weihs[1]; [1]Johns Hopkins University; [2]Medical College of Wisconsin; [3]University of Utah

8:40 AM
Effect of Processing on the Morphology and Electrical Properties of Synthetic Bioceramics: Jakob Peabody[1]; Nithin Tangirala[1]; Lauren Gower[1]; Florence Lucey[1]; Narasimha Prasad[1]; Ching Hua Su[1]; Bradley Arnold[1]; Fow-Sen Choa[1]; Brian Cullum[1]; *Laxmi Hatte*[1]; Narsingh Singh[1]; [1]University of Maryland Baltimore County

9:00 AM
Tailoring Mechanical Properties of NiTi Shape Memory Alloys Through Key Parameters in One-Dimensional Compositional Modulation: *Zexu Chen*[1]; Yunzhi Wang[1]; [1]The Ohio State University

9:20 AM Invited
Battling Infections in Bone Regeneration: The Power of Metal-Doped Hydroxyapatite: *Antonia Ressler*[1]; Tomislav Ivankovic[2]; Jasna Hrenovic[2]; Inga Urlic[2]; Setareh Zakeri[1]; Blanka Dadic[2]; Virginia Alessandra Gobbo[1]; Ivana Goic-Barisic[3]; Jonathan Massera[1]; Erkki Levänen[1]; [1]Tampere University; [2]University of Zagreb; [3]University Hospital of Split

9:40 AM
Novel Ceramic Nano-Composite Coatings for Improved Implant Performance: *Radha Trivedi*[1]; Carolina Tallon[1]; John-Paul O'Shea[2]; [1]Virginia Polytechnic Institute and State University; [2]Virginia Tech Carilion School of Medicine

10:00 AM
Engineered Porosity Hydroxyapatite - Sodium Potassium Niobate Bio-Composites: *Komalakrushna Hadagalli*[1]; Bikramjit Basu[2]; Rajendra Bordia[1]; [1]Clemson University; [2]Indian Institute of Science, Bangalore

CERAMIC AND GLASS MATERIALS

Phase Transformations in Ceramics: Science and Applications — Phase Transformations in Ceramics I

Sponsored by: ACerS Basic Science Division

Program Organizers: Scott Mccormack, University of California, Davis; Theresa Davey, Bangor University; Waltraud Kriven, University of Illinois at Urbana-Champaign; Pankaj Sarin, Oklahoma State University; Sanjay V. Khare, University of Toledo

Wednesday AM | October 1, 2025
B132 | Convention Center

Session Chairs: Scott McCormack, University of California, Davis; Theresa Davey, Bangor University

8:00 AM Introductory Comments

8:10 AM Invited
New Directions for Lattice Engineering in Shape Memory Ceramics: *Alejandra Slagter*[1]; Christopher Schuh[1]; [1]Northwestern University

8:40 AM Invited
Diffusionless Transformations in Ceramics: Can Brittle Materials Survive Martensitic Transitions?: *Katherine Faber*[1]; Laura Quinn[1]; [1]California Institute of Technology

9:10 AM Invited
Stress History Encoding in Rare Earth Orthophosphate Ceramics: *Corinne Packard*[1]; [1]University of Southern California

9:40 AM Invited
Theory and Phase-Field Models of Phase Transformations Starting From Classical First and Second Laws of Thermodynamics: *Long-Qing Chen*[1]; [1]Pennsylvania State University

10:10 AM Break

10:30 AM Invited
Pressure-Induced Crystal Transformation With Thermodynamic Implications: *Xiaofeng Guo*[1]; Shinhyo Bang[1]; Xiaodong Zhao[1]; Andrew Strzelecki[2]; Richard Brutchey[3]; Hongwu Xu[2]; [1]Washington State University; [2]Los Alamos National Laboratory; [3]University of Southern California

11:00 AM Invited
Atomic-Scale Structural Analysis of Metastable Zirconia: *Maik Lang*[1]; Alexandre Solomon[1]; Eric O'Quinn[1]; Gianguido Baldinozzi[2]; Juejing Liu[3]; Xiaofeng Guo[3]; Joerg Neuefeind[4]; Christina Trautmann[5]; [1]University of Tennessee; [2]Université Paris-Saclay; [3]Washington State University; [4]Oak Ridge National Laboratory; [5]GSI Helmholtzzentrum für Schwerionenforschung

11:30 AM
Characterization of High-Energy Ball Mill Induced Metastable Phase Transformations in Lanthanide Sesquioxides: *William Reed*[1]; Casey Corbridge[1]; Antonio Fuentes[2]; Eric O'Quinn[1]; Changyong Park[3]; David Sprouster[4]; Maik Lang[1]; [1]University of Tennessee; [2]Cinvestav Unidad Saltillo; [3]Argonne National Laboratory Advanced Photon Source HPCAT; [4]Stony Brook University, NSLII

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Porous Materials for Energy and Environment Applications — Porous Materials II

Sponsored by: ACerS Basic Science Division, ACerS Electronics Division, ACerS Energy Materials and Systems Division

Program Organizers: Winnie Wong-Ng; Kevin Huang, University of South Carolina; Lan Li, Boise State University

Wednesday AM | October 1, 2025
B244/245 | Convention Center

Session Chairs: Kevin Wang, University of South Carolina; Winnie Wong-Ng, National Institute of Standards and Technology (NIST); Lan Li, Boise State University; Eric Cockayne, National Institute of Standards and Technology

8:00 AM Invited
Simple, Tough, and Effective Porous Coating for Anti-Corrosion Application: *Fangming Xiang*[1]; David Hopkinson[1]; [1]National Energy Technology Laboratory

8:30 AM Invited
Invited: Novel Nanostructured Porous Materials for Detection and Degradation of Persistent Organic Pollutants: Wenhu Wang[1]; Sathvik Peddamalla[1]; *Sharmila Mukhopadhyay*[1]; [1]University of Maine

9:00 AM Invited
Structural Investigation of Porous Crystalline Framework Materials by Combining X-Ray/Neutron Powder Diffraction and Ab Initio Calculations: *Wei Zhou*[1]; [1]National Institute of Standards and Technology

9:30 AM Invited
Crystal Packing-Related Porosity in Molecular Co-Crystals: Porphyrin/C60 as a Working Model System: *Lawrence Cook*[1]; Greg Brewer[2]; Winnie Wong-Ng[3]; [1]PhazePro Technologies; [2]The Catholic University of America; [3]National Institute of Standards and Technology

10:00 AM Break

10:20 AM Invited
Binder Jet Printing and Sintering of Metal Foams Parts Through the Powder Space-Holder Technique: Pierangeli Rodriguez De Vecchis[1]; *Markus Chmielus*[1]; [1]University of Pittsburgh

10:50 AM
Novel Porous Material for Energy Conservation: *Afsaneh Rabiei*[1]; [1]North Carolina State University

11:10 AM
Preparation of Porous Catalysts With a Rene Structure Using Functionally Active Charges: Borys Sereda[1]; Irina Kruglyak[1]; *Dmytro Sereda*[1]; [1]DSTU

11:30 AM
Production of Nickel-Based Catalysts for Efficient Purification of Waste Gas Emissions: Borys Sereda[1]; Irina Kruglyak[1]; *Dmytro Sereda*[1]; Ivan Suslov[1]; [1]DSTU

11:50 AM
Ultralow Thermal Conductivity of Porous SiOC Aerogels for High-Temperature Applications: *Adane Muche Abebe*[1]; Mattia Biesuz[1]; Cekdar Vakifahmetoglu[2]; Michele Cassetta[3]; Alexandro Martucci[4]; Gian Demonico Sorarù[1]; [1]University of Trento; [2]Izmir Institute of Technology; [3]University of Verona; [4]University of Padova

NUCLEAR ENERGY

Progressive Solutions to Improve the Corrosion Resistance of Nuclear Waste Storage Materials — Improving Processing of Nuclear Waste Glass, Mechanical Mechanisms of Crack Propagation and Measurement of Residual Stresses in Stainless Steel

Sponsored by: TMS: Corrosion and Environmental Effects Committee, TMS: Energy Committee

Program Organizers: Madeleine Jordache, Stevens Institute of Technology; Gary Pickrell, Virginia Tech

Wednesday AM | October 1, 2025
D280 | Convention Center

Session Chairs: Madeleine Jordache, Stevens Institute of Technology; Gary Pickrell, Virginia Tech

8:00 AM Introductory Comments

8:05 AM
Investigating the Effects of Alumina Sources and Rhenium Concentrations on the Rhenium Incorporation Into LAW Glass: *Keith Bryce*[1]; Derek Dixon[1]; Ji-Hye Seo[1]; Richard Pokorný[2]; Albert Kruger[3]; [1]Pacific Northwest National Laboratory; [2]University of Chemistry and Technology, Prague; [3]US DOE Hanford Field Office

8:35 AM
Analysis of Plugging of High-Level Waste Melter Pour Spout: *Donna Guillen*[1]; John Vienna[2]; Pavel Hrma[3]; Albert Kruger[4]; [1]Idaho National Laboratory; [2]Pacific Northwest National Laboratory; [3]AttainX; [4]U.S. Department of Energy

9:05 AM
Prediction of Pitting and Stress Corrosion Crack Initiation in SS 304 Waste Storage Containers: *Lucille Dentice*[1]; Nathan Gehmlich[2]; Thang Nguyen[2]; Ronit Roy[1]; Rebecca Schaller[3]; Mychailo Toloczko[4]; Maria Okuniewski[2]; Janelle Wharry[1]; [1]University of Illinois Urbana-Champaign; [2]Purdue University; [3]Sandia National Laboratories; [4]Pacific Northwest National Laboratory

9:25 AM Invited
Mechanical Perspectives on Chloride-Induced Stress Corrosion Cracking of Stainless Steel: *Janelle Wharry*[1]; Lucille Dentice[1]; Ronit Roy[1]; Nathan Gehmlich[2]; Thang Duc Nguyen[2]; Maria Okuniewski[2]; Haozheng Qu[3]; Rebecca Schaller[4]; Mychailo Toloczko[5]; [1]University of Illinois; [2]Purdue University; [3]GE Vernova; [4]Sandia National Laboratories; [5]Pacific Northwest National Laboratory

9:55 AM Invited
Measuring Residual Stresses in Additively Manufactured Large 316L Stainless Steel Rings on VULCAN: *Dunji Yu*[1]; Wei Tang[1]; Ke An[1]; Harley Skorpenske[1]; Dominic Giuliano[1]; Oscar Martinez[1]; Andrzej Nycz[1]; [1]Oak Ridge National Laboratory

PROCESSING AND MANUFACTURING

Sintering and Related Powder Processing Science and Technologies — Field-Assisted Sintering and SPS: Mechanisms, Materials, and Applications

Sponsored by: TMS: Powder Materials Committee, ACerS Basic Science Division

Program Organizers: Charles Maniere, CNRS; Eugene Olevsky, San Diego State University; Ricardo Castro, Lehigh University; Elisa Torresani, San Diego State University; Diletta Giuntini, Eindhoven University of Technology; Wolfgang Rheinheimer, University of Stuttgart

Wednesday AM | October 1, 2025
B233 | Convention Center

Session Chairs: Dariusz Garbiec, Lukasiewicz; Balice Lucas, Juelich

8:00 AM Invited
Advanced Manufacturing Enabled by Spark Plasma Sintering: *Dariusz Garbiec*[1]; Grzegorz Kubicki[1]; Jakub Wiśniewski[1]; Albert Kania[1]; Wiktoria Krzyżaniak[1]; Diana Marcano[1]; Maria Wiśniewska[1]; [1]Lukasiewicz Research Network - Poznan Institute of Technology

8:30 AM Invited
High-Efficient Sintering Technologies for Advanced Energy Materials: *Luca Balice*[1]; Syed Ali Afzal[1]; Moritz Kindelmann[1]; Tarini Prasad Mishra[1]; Martin Bram[1]; Olivier Guillon[1]; [1]IMD-2, Forschungszentrum Jülich GmbH

9:00 AM Invited
Enhancing Polymer-Derived TiC/SiC Ceramics With MXene Reinforcements via Spark Plasma Sintering: *Kathy Lu*[1]; Mohammad Shirani[1]; Wei Li[1]; [1]University of Alabama Birmingham

9:30 AM
Enabling Advanced Materials With Spark Plasma Sintering: From R&D to Scalable Production at California Nanotechnologies: Eric Eyerman[1]; *Christopher Melnyk*[1]; [1]California Nanotechnologies

9:50 AM Invited
FAST/SPS: Industrial Post-process For Full Densification of 3D Complex Shape From Sinter Based Additive Manufacturing Processes: *Arnaud Fregeac*[1]; Meyane Hurtault[1]; Yannick Beynet[1]; Romain Epherre[1]; [1]NORIMAT

10:20 AM Break

10:40 AM Invited
Effect of High Pressure Spark Plasma Sintering on Microstructure and Properties of Nano-Structured Magnesium Aluminate Spinel: *Sandrine Cottrino*[1]; Thierry Douillard[1]; Nicholas Blanchard[1]; Laurent Gremillard[1]; Sylvain Meille[1]; Sylvie Le Floch[1]; [1]MATEIS Laboratory

11:10 AM
Solid-State Diffusion Bonding for INCONEl 617 Superalloy Using Field-Assisted Sintering Technology (FAST) Guided by CALPHAD Approach: *Husain Alnaser*[1]; Abdulaziz Kurdi[2]; Ahmed Degnah[2]; [1]TiCoNi Co.; [2]KACST

IRON AND STEEL (FERROUS ALLOYS)

Steels for Sustainable Development IV — Steel Development Supporting Sustainable Manufacturing and Energy Infrastructure

Sponsored by: TMS: Steels Committee, AIST Metallurgy—Processing, Products and Applications Technology Committee

Program Organizers: Joshua Mueller, Michigan Technological University; Adriana Eres-Castellanos, Los Alamos National Laboratory; Jonah Klemm-Toole, Colorado School of Mines; Colin Stewart, US Naval Research Laboratory; Pello Uranga, CEIT-BRTA; Jeongho Han, Hanyang University; Ian Zuazo, ArcelorMittal Global R&D - Industeel; Hyunseok Oh, University of Wisconsin - Madison; Alexandra Glover, Michigan Technological University

Wednesday AM | October 1, 2025
D282 | Convention Center

Session Chairs: Jonah Klemm-Toole, Colorado School of Mines; Josh Mueller, Michigan Technological University; Adriana Eres-Castellanos Eres-Castellanos, Los Alamos

8:00 AM Introductory Comments

8:05 AM Invited
Low Emission Thin Slab Direct Rolling of Ultra-High Strength Steels: *Charles Enloe*[1]; [1]Steel Dynamics

8:45 AM Invited
Advancing Steel: Innovations in Lightweight Applications and Sustainable Processing: *Daniel Coughlin*[1]; [1]United States Steel Corp

9:25 AM Invited
Exploring the Scalability of Accumulative Roll Bonding Nanolaminates for Pulsed Electromagnets by Substituting an Interstitial Free Steel for Niobium: *Taylor Jacobs*[1]; Tessa Van Volkenburg[1]; Bradley Hall[2]; David Austin[2]; Ted Agerton[1]; [1]Helion Energy; [2]Materion Performance Materials - Lincoln

10:05 AM Break

10:25 AM
Methodology to Evaluate the Heat Checking Resistance of Open-Die Forge Tooling: *Jack Schaller*[1]; Daniel Branagan[1]; Joshua Mueller[1]; [1]Michigan Technological University

10:55 AM Invited
Metallurgical Analysis and Forward Modeling of Hybrid Laser Arc Welds for SMR Containment Vessels: *Christopher Finfrock*[1]; Jeffrey Rodelas[1]; Dominic Piccone[1]; Elizabeth Smith[1]; Edmundo Corona[1]; Charles Bryan[1]; Frank DelRio[1]; Priya Pathare[1]; [1]Sandia National Laboratories

11:35 AM
Effect on Magnetic Properties of Simulated Twin Roll Cast Non-Grain Oriented Si Steel: *Naram Naidu Messala*[1]; Justin Singleton[1]; Mario Buchely[1]; Ronald O'Malley[1]; Paul Kelly[2]; Rama Mahapatra[2]; [1]Missouri University of Science and Technology; [2]Consultant Castrip LLC

SPECIAL TOPICS

TMS Frontiers of Materials Award Symposium: Harnessing Charged and Chemical Defects for Exceptional Structural and Functional Properties — TMS Frontiers of Materials Award Symposium III

Sponsored by: TMS: Nanomechanical Materials Behavior Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizer: Yu Zou, University of Toronto

Wednesday AM | October 1, 2025
C162A | Convention Center

Session Chairs: Liang Qi, University of Michigan; Maryam Ghazisaeidi, The Ohio State University

8:00 AM Invited
Tailoring Defects in Semiconductors: From Highly Mismatched Alloys to Polytype Heterostructures: *Rachel Goldman*[1]; [1]University of Michigan

8:30 AM Invited
Understanding Self-Catalyzed Growth Kinetics of III-V Semiconductors by Modeling Solid–Melt Interfaces: Zhucong Xi[1]; *Liang Qi*[1]; [1]University of Michigan

9:00 AM Invited
The Origin of Photo Plasticity in II-V Compounds: *Maryam Ghazisaeidi*[1]; [1]Ohio State University

9:30 AM Invited
Atomistic Roughening of m-Long Dislocation Lines Under Electric Fields: *Liming Xiong*[1]; [1]North Carolina State University

10:00 AM Invited
On the Embrittlement of Grain Boundaries in CdTe from $CdCl_2$ Passivation: *Jonathan Cappola*[1]; Joshua Carbajal[1]; Feng Yan[1]; Lin Li[1]; [1]Arizona State University

MATERIALS-ENVIRONMENT INTERACTIONS

Understanding and Mitigating High Temperature Corrosion Processes Through Synergistic Integration of Experimental, Computational and Manufacturing Techniques — Multiscale Modeling of Corrosion Induced Degradation of High Temperature Alloys

Sponsored by: TMS: Corrosion and Environmental Effects Committee

Program Organizers: Rishi Pillai, Oak Ridge National Laboratory; Brian Gleeson, University of Pittsburgh; Tianle Cheng, National Energy Technology Laboratory; Mathias Galetz, DECHEMA-Forschungsinstitut

Wednesday AM | October 1, 2025
B242/243 | Convention Center

Session Chairs: Mathias Galetz, DECHEMA Corrosion Center; Rishi Pillai, ORNL; Brian Gleeson, University of Pittsburgh

8:00 AM Invited
Modeling Premature Breakaway Oxidation of Ferritic Stainless Steels Above 850°C: *Anton Chyrkin*[1]; Jan Froitzheim[1]; [1]Chalmers University of Technology

8:30 AM Invited
Phase Field Informed Poisson-Nernst-Planck Model for Corrosion in Molten Salt Environments: *Chaitanya Bhave*[1]; Parikshit Bajpai[1]; Mauricio Tano Retamales[1]; Samuel Walker[1]; [1]Idaho National Laboratory

9:00 AM
Predicting Internal to External Oxidation in High-Temperature Ni-Cr Alloys Using a CALPHAD-Informed Phase-Field Model: *Ziming Zhong*[1]; Peichen Wu[2]; Rishi Pillai[3]; Kumar Ankit[1]; [1]Arizona State University; [2]Texas A&M University; [3]Oak Ridge National Laboratory

9:20 AM
Discovering Mappings Between Thermodynamic States in Metal Oxidation Using Machine Learning: *Nathan Bianco*[1]; Scott Monismith[1]; Remi Dingreville[1]; [1]Sandia National Laboratories

9:40 AM
AI-Driven Multiscale Computational Framework for Corrosion-Induced Degradation of High Temperature Alloys: *Praneeth Bachu*[1]; Marie Romedenne[1]; Severine Cambier[1]; Rishi Pillai[1]; [1]Oak Ridge National Laboratory

MATERIALS-ENVIRONMENT INTERACTIONS

Understanding Corrosion-Related Cracking — Complex Corrosion Conditions and Cracking, Corrosion Fatigue and Beyond

Sponsored by: TMS: Corrosion and Environmental Effects Committee

Program Organizers: Tianle Cheng, National Energy Technology Laboratory; Hyokyung Sung, Kookmin University; Gordon Tatlock, University of Liverpool

Wednesday AM | October 1, 2025
D182 | Convention Center

Session Chairs: Tianle Cheng, NETL; Hyokyung Sung, Kookmin University

8:00 AM Invited
Effect for Hydrogen Embrittlement and Sulfide Stress Cracking in HSLA Carbon Steel When Exposed to H2S Environments: *Homero Castaneda*[1]; Raymundo Case[1]; Lianlian Liu[2]; [1]Texas A&M University; [2]Verdagy

8:30 AM
Understanding the Effect of Tempering on Sulfide Stress Cracking Response in High-Strength Casing Steel: *Syed Alam*[1]; Amrita Bag[1]; Andrew Hamilton[1]; [1]EVRAZ NA

8:50 AM Invited
Influence of Cold Work on Environmentally Assisted Cracking of a Single Crystal Nickel Based Superalloy CMSX-4: *Grant Gibson*[1]; [1]Rolls-Royce Plc.

9:20 AM Invited
Understanding the Ability of Combined Effects Corrosion Fatigue Accelerated Testing to Properly Reflect In-Service Performance for Aerospace Al Alloys: *Jenifer Locke*[1]; Olivia Underhill[1]; Brandon Free[2]; Daniel Egbuzie[1]; Jason Niebuhr[3]; Sarah Dorman[3]; Christopher Taylor[1]; [1]Ohio State University; [2]LTA Research; [3]SAFE Inc

9:50 AM
Influence of Crack Environment pH on Corrosion Fatigue Crack Growth in Aerospace Aluminum Alloys: *Gabby Montiel*[1]; Jenifer Locke[1]; [1]Ohio State University

10:10 AM Break

10:30 AM
Understanding the Role of Microstructure on the Sub Critical Crack Growth Rate and Crack Path in Pipeline Ferritic Steels: *Elisabeth Kuebel*[1]; Aeriel Leonard[1]; Ramgopal Thodla[2]; [1]Ohio State University; [2]DNV GL

10:50 AM Invited
Misch Metal-Induced Corrosion Resistance Enhancement in Ti-Based Amorphous Powders: *YeonJoo Lee*[1]; Hyokyung Sung[1]; Jae Bok Seol[1]; Kisub Cho[1]; Hwi Jun Kim[2]; Hyunjoo Choi[1]; [1]Kookmin University; [2]Korea Institute of Industrial Technology

11:10 AM Invited
Reduced Graphene Oxide as a Protection Layer for Al: Hanuel Jang[1]; *Hyunjoo Choi*[1]; [1]Kookmin University

11:40 AM
Study of the Role of Hydrogen in the Cold-Cracking of As-Cast 7xxx Aluminum Alloys: *Jason Kramer*[1]; [1]Carnegie Mellon University

SPECIAL TOPICS

ACerS Robert B. Sosman Award Symposium: Solid State Chemistry Meets Solid State Ionics — Basic Science Robert B. Sosman Award Lecture

Sponsored by: ACerS Basic Science Division

Program Organizer: William Chueh, Stanford University

Wednesday PM | October 1, 2025
B131 | Convention Center

Session Chair: William Chueh, Stanford University

1:00 PM Keynote
Interfacial Defect Chemistry of Ceria: *Sossina Haile*[1]; [1]Northwestern University

ADDITIVE MANUFACTURING

Additive Manufacturing Modeling, Simulation, and Machine Learning: Microstructure, Mechanics, and Process — AM Modeling - Microstructures and Thermal Analyses II

Sponsored by: TMS: Additive Manufacturing Committee, TMS: Integrated Computational Materials Engineering Committee

Program Organizers: Jing Zhang, Purdue University; Li Ma, Johns Hopkins Applied Physics Laboratory; Charles Fisher, Office Of Naval Research; Brandon McWilliams, US Army Research Laboratory; Yeon-Gil Jung, Korea Institute of Ceramic Engineering & Technology

Wednesday PM | October 1, 2025
C150 | Convention Center

Session Chairs: Li Ma, Johns Hopkins University Applied Physics Laboratory; Jing Zhang, Purdue University; Charles Fisher, NSWC Carderock Division

2:00 PM
Investigation of Argon Gas Flow and Spatter Dynamics in Laser Powder Bed Fusion Using the Aconity MIDI System: *Jashanpreet Saini*[1]; Nicholas O'Brien[1]; Satbir Singh[1]; Jack Beuth[1]; [1]Carnegie Mellon University

2:20 PM
Multi-Fidelity Framework to Predict the Melt Pool Characteristics for Laser Powder Bed Fusion of Inconel 718: *Abdul Khalad*[1]; [1]Deakin University

2:40 PM
Net Shape Metal Additive Manufacturing via Polymer Bound Energetics in a Non-Inert Environment: *Mrinaal Lorengo*[1]; Ji Ma[1]; [1]University of Virginia

3:00 PM
In Situ Modulation of Residual Stresses During Laser Powder Bed Fusion: *Edwin Schwalbach*[1]; Rose Eckerle[2]; Joshua Ward[2]; Mark Obstalecki[1]; Paul Shade[1]; Mitchell Hughes[2]; Gregory Sparks[2]; Taylor Schuller[3]; Christopher Budrow[4]; Kelly Nygren[5]; Diwakar Naragani[6]; [1]Air Force Research Laboratory; [2]University of Dayton Research Institute; [3]Materials Resources LLC; [4]Budrow Consulting LLC; [5]Cornell University; [6]QuantiMACS LLC

3:20 PM Break

3:40 PM
Thermodynamic Modeling to Guide Process Optimization Through Minimization of Sigma Phase Formation in Graded Stainless Steel–Vanadium Structures: *Mikayla Obrist*[1]; Bernard Gaskey[1]; Cheryl Hawk[1]; Robert Hackenberg[1]; Saryu Fensin[1]; John Carpenter[1]; [1]Los Alamos National Laboratory

4:00 PM
In-Situ Exposure of Microstructure via Spot Melting in Electron Beam Powder Bed Fusion: *Toan Truong*[1]; Haojun You[1]; Mohsen Taheri Andani[1]; [1]Texas A&M University

ADDITIVE MANUFACTURING

Additive Manufacturing of Ceramic-Based Materials: Process Development, Materials, Process Optimization and Applications — Ceramic Powder Bed Processes

Sponsored by: ACerS Basic Science Division, ACerS Engineering Ceramics Division, ACerS Manufacturing Division

Program Organizers: Xuan Song, University of Iowa; Lei Chen, University of Michigan-Dearborn; Yiquan Wu, Alfred University; Paolo Colombo, University of Padova; Rajendra Bordia, Clemson University; Long-Qing Chen, Pennsylvania State University

Wednesday PM | October 1, 2025
C161A | Convention Center

Session Chairs: Bai Cui, University of Nebraska-Lincoln; Xuan Song, University of Iowa

2:00 PM Invited
Functional Defects in Advanced Ceramics Fabricated by Selective Laser Sintering: *Bai Cui*[1]; Lanh Trinh[1]; Xiang Zhang[1]; Fei Wang[1]; Luke Wadle[1]; Haoyu Dong[1]; Yongfeng Lu[1]; [1]University of Nebraska Lincoln

2:30 PM
Expanding Laser Powder Bed Fusion to Functional Ceramics: Bulk MoC Cathodes for Catalysis: *Fanyue Kong*[1]; Keithen Orson[1]; Haobo Wang[1]; Sanjay Choudhary[1]; Petra Reinke[1]; Ji Ma[1]; [1]University Of Virginia

2:50 PM
Atomic Layer Deposition (ALD) for Nanoscale SiC AM Feedstock Improvement: *Chris Gump*[1]; Guillermo Rojas[1]; Dane Lindblad[1]; Casey Christopher[1]; Tommy Martin[1]; [1]Forge Nano

3:10 PM Break

3:30 PM
Effect of Bimodal Powder on the Densification of a Green Body via Binder Jetting: *Akihiro Shimamura*[1]; Chika Matsunaga[1]; Chung Ying[1]; Mikinori Hotta[1]; Naoki Kondo[1]; [1]National Institute of Advanced Industrial Science and Technology

3:50 PM
Development of Aluminium Coating via DC Pulse Electrophoretic Deposition on Inconel 625 Particles for High-Temperature Applications: *Manisha Chauhan*[1]; Michael Zinigrad[1]; Alexander Sobolev[1]; [1]Ariel University

4:10 PM
Powder Behavior Simulation for Ceramic Additive Manufacturing: Enhancing Process Understanding and Material Performance: *Hideyuki Kanematsu*[1]; Masahiko Kuwabara[2]; Jeremy Knopp[2]; Tadaomi Fujieda[3]; Takayoshi Nakano[4]; [1]BEL Inc.; [2]Armatus ai; [3]Prometech Software Inc.; [4]Osaka University

ADDITIVE MANUFACTURING

Additive Manufacturing: Design, Materials, Manufacturing, Challenges and Applications — Additive Manufacturing: Design, Materials, Manufacturing, Challenges and Applications - Session V

Sponsored by: ACerS Other

Program Organizers: Navin Manjooran, Solve; Gary Pickrell, Virginia Tech

Wednesday PM | October 1, 2025
C151 | Convention Center

Session Chairs: Gary Pickrell, Virginia Tech; Navin Manjooran, Solve

2:00 PM Introductory Comments

2:40 PM
Microstructure and Mechanical Properties Correlation of Additively Manufactured IN939 Superalloy: *Md Shahwaz*[1]; Merve Dogu[2]; Hengfeng Gu[3]; Dermot Brabazon[2]; Indrani Sen[1]; [1]Indian Institute of Technology Kharagpur; [2]Dublin City University Ireland; [3]Ansys Inc USA

3:00 PM
Optimizing Three-Dimensional Topologies of Random Materials with Short-Range Order: *Aayushi Chauhan*[1]; Christopher Schuh[2]; [1]Massachusetts Institute of Technology; [2]Northwestern University

3:20 PM
Passively Deployable Shape Memory Alloy Heat Pipes for Small Satellite Thermal Management: *Mique Gonzales*[1]; Damian Williams[1]; Foster Feni[1]; Alexander Rattner[1]; Reginald Hamilton[1]; [1]Pennsylvania State University

3:40 PM Break

3:50 PM
Scan Strategies and Grain Growth of Laser Powder Bed Fusion 316L Stainless Steel: *Lucas Turner*[1]; Ji Ma[1]; Prosenjit Biswas[1]; [1]University of Virginia

4:10 PM
The Effect of Geometry on the Microstructure and Crystallographic Texture of Haynes 282 Superalloy Produced via Electron Beam Powder Bed Fusion: *Amamchukwu Ilogebe*[1]; Maria Quintana[1]; Peter Collins[1]; [1]Iowa State University

4:30 PM
The Influence of LPBF Parameters on Surface Roughness and Corrosion Behavior of CoCr Alloys: *Asad Abu Alrub*[1]; Mohamad Mahmoud[1]; Mohammad Albakri[2]; Marwa AbdelGawad[2]; [1]Texas A&M University at Qatar; [2]Hamad Bin Khalifa University

4:50 PM
Tunable Mechanical Properties and Flowability of SUS316L Steel Foam Fabricated via Material Extrusion Additive Manufacturing: *Noh-Geon Song*[1]; So-Yeon Park[1]; Jung Yeul Yun[2]; Ju Yong Kim[3]; Kee-Ahn Lee[1]; [1]Inha University; [2]Korea Institute of Materials Science; [3]Reprotech

ADDITIVE MANUFACTURING

Additive Manufacturing: Equipment, Instrumentation and In-Situ Process Monitoring — Multi-Modal Monitoring, Data Integration, and Post-Process Analysis

Sponsored by: TMS: Additive Manufacturing Committee

Program Organizers: Samantha Webster, Colorado School of Mines; Jihoon Jeong, Texas A&M University; Benjamin Bevans, University of Oklahoma

Wednesday PM | October 1, 2025
C160A | Convention Center

Session Chairs: Samantha Webster, Colorado School of Mines; Jihoon Jeong, Texas A&M University

2:00 PM Invited
Leveraging Multi-Modal ISPM for Rapid PBF-LB Qualification: *Yash Parikh*[1]; [1]EOS of North America, Inc.

2:30 PM Invited
Mitigating Printing Anomalies in Aerosol Jet Printing: A Data-Driven Approach for Process Planning and Optimization: *Shenghan Guo*[1]; Hasnaa Ouidadi[1]; Shihab Shakur[2]; Sri Ramesh[2]; [1]Arizona State University; [2]Oklahoma State University

3:00 PM
Real-Time Defect Detection in Additive Manufacturing via In Situ Backscattered Electron Imaging: *Jonathan Buckley*[1]; [1]JEOL USA

3:20 PM Break

3:40 PM
Novel Multi-Sensor Platform Based on In-Line 2D-X-Ray Diffraction and Dynamics Systems Approach for Real-Time Monitoring of Transient Microstructures & Properties of Additively Manufactured Metals: *Puskar Pathak*[1]; [1]University of Houston

4:00 PM
Spatter Generators: Sizes, Locations, and Morphologies of Ejecta from Laser Powder Bed Fusion: *Nicholas Obrien*[1]; Jordan Weaver[2]; Dave Deisenroth[2]; Satbir Singh[1]; Jack Beuth[1]; [1]Carnegie Mellon University; [2]National Institute of Standards and Technology

4:20 PM
Recovery and Processing of Metal Feedstock Powder for Re-Use in Cold Spray Deposition: *Ashton Lyon*[1]; Kyle Tsaknopoulos[1]; Danielle Cote[1]; [1]Worcester Polytechnic Institute

PROCESSING AND MANUFACTURING

Advances in Refractory High Entropy Alloys and Ceramics — Alloy Design and Modeling

Sponsored by: TMS: Refractory Metals & Materials Committee, ACerS Basic Science Division

Program Organizers: Mingwei Zhang, University of California, Davis; Arezoo Zare, Washington State University; John Perepezko, University of Wisconsin-Madison; Bai Cui, University of Nebraska Lincoln

Wednesday PM | October 1, 2025
B232 | Convention Center

Session Chair: Mingwei Zhang, University of California, Davis

2:00 PM Invited
Two-Shot Optimization of Compositionally Complex Refractory Alloys: *Raymundo Arroyave*[1]; [1]Texas A&M University

2:30 PM Invited
ULTERA Data Ecosystem for Compositionally Complex Materials: *Zi-Kui Liu*[1]; Adam Krajewski[1]; [1]Pennsylvania State University

3:00 PM
Improving the Use of Machine Learning Tools for High Entropy Alloy Development: *David Flores*[1]; Wesley Reinhart[1]; [1]Pennsylvania State University

3:20 PM Break

3:40 PM Invited
AI-Driven Discovery of Compositionally Complex Alloys for Enhanced Mechanical Performance: *Bernard Gaskey*[1]; Janith Wanni[1]; Mikayla Obrist[1]; Avanish Mishra[1]; Nithin Mathew[1]; Saryu Fensin[1]; [1]Los Alamos National Laboratory

4:10 PM Invited
Simulations and Modelling of the Mechanical Behavior of Compositionally Complex Concentrated BCC Alloys: *Satish Rao*[1]; [1]University of California, Berkeley

4:40 PM Invited
Composition Design of Refractory Compositionally Complex Alloys Using Machine Learning Models: *Tao Liang*[1]; Haixuan Xu[1]; [1]University of Tennessee at Knoxville

5:10 PM
Heat Transport in WMoTaNbV High-Entropy Alloy via First-Principles Calculation: *Himani Mishra*[1]; Shuxiang Zhou[1]; Michael Moorehead[1]; Pierre-Clément Simon[1]; [1]Idaho National Laboratory

LIGHTWEIGHT ALLOYS

Advances in Titanium Technology — Deformation Mechanisms and Mechanical Properties II

Sponsored by: TMS: Titanium Committee

Program Organizers: G. Babu Viswanathan, Ohio State University; Michael Mills, Ohio State University; Sriram Vijayan, Michigan Technological University; Abhishek Sharma, Worcester Polytechnic Institute; Soumya Nag, Oak Ridge National Laboratory; Thomas Broderick, Federal Aviation Administration; Simon Ringer, University of Sydney; Vasisht Venkatesh, Pratt & Whitney; Paraic O'Kelly, Ohio State University

Wednesday PM | October 1, 2025
C172 | Convention Center

Session Chair: To Be Announced

2:00 PM Invited
Development of High Temperature Ti alloys with Improved Mechanical Properties: *Jayaprakash Murugesan*[1]; [1]Indian Institute of Technology Indore

2:20 PM
Mechanical Behavior and Failure Mechanisms of Ti-Al4%Mg Metal Laminates (MLs) and Reacted Metal-Intermetallic Laminates (MILs) at Micro and Nanometer Layer Thicknesses: *Daniel Yin*[1]; Rodney Mccabe[1]; Thomas Nizolek[1]; [1]Los Alamos National Laboratory

2:40 PM
Virtual Surgical Planning, Design, and Closed-Loop Fabrication, of Personalized Titanium-Based Skeletal Fixation Plates at the Point-of-Care: *Brian Thurston*[1]; Luis Olivas-Alanis[1]; Javier Vazquez-Armendariz[1]; Raihan Uddin[1]; Tyler Babinec[1]; David Hoelzle[1]; Glenn Daehn[1]; Robert Gao[2]; David Dean[1]; [1]The Ohio State University; [2]Case Western Reserve University

3:00 PM
High-Throughput Investigation of Phase Transformation in Ti-Fe Alloys: *Deepak Pillai*[1]; Yufeng Zheng[1]; [1]University of North Texas

3:20 PM Break

3:40 PM
Production of Titanium-Based Intermetallic Alloy with Specified Structure and Properties: Borys Sereda[1]; Irina Kruglyak[1]; *Dmytro Sereda*[1]; Anton Prolomov[1]; Sergiy Chuhno[1]; [1]DSTU

4:00 PM
Advanced Approach for Evaluation of Titanium Anomalies: *Masayuki Tsukada*[1]; [1]Ihi Corporation

4:20 PM
Characterization and Optimization of a Novel Metastable β Ti Alloy: *Nicole Hudak*[1]; Brian Welk[1]; Gopal (Babu) Viswanathan[1]; Hamish Fraser[1]; [1]Ohio State University

4:40 PM
Development of a Novel Two Phase TWIP Alloy: *Mathew Cohen*[1]; Paraic O'Kelly[1]; Brian Welk[1]; Gopal Viswanathan[1]; Hamish Fraser[1]; [1]The Ohio State University

5:00 PM
Site Specific Post Processing of -Titanium Lattices Via Joule Heating: *Erin Cleary*[1]; Jonathan Zaugg[1]; Maria Quintana[1]; Peter Collins[1]; [1]Iowa State University

NANOMATERIALS

Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials — Growth and Property Control of Nanomaterials II

Sponsored by: ACerS Basic Science Division, ACerS Electronics Division, ACerS Energy Materials and Systems Division, ACerS Engineering Ceramics Division

Program Organizers: Haitao Zhang, University of North Carolina at Charlotte; Gurpreet Singh, Kansas State University; Kathy Lu, University of Alabama Birmingham; Edward Gorzkowski, Naval Research Laboratory; Michael Naguib, Tulane University; Sanjay Mathur, University of Cologne; Wonmo Kang, Arizona State University; Babak Anasori, Purdue University; Oliver Diwald, Paris Lodron Universitaet Salzburg; Hyunjoo Choi, Kookmin University

Wednesday PM | October 1, 2025
B230 | Convention Center

Session Chairs: Oliver Diwald, University of Salzburg; Haitao Zhang, University of North Carolina at Charlotte; Babak Anasori , Purdue University

2:00 PM Invited
Designing Functionality Through Disorder in Complex Oxides: *Christina Rost*[1]; [1]Virginia Tech

2:30 PM Invited
Structure-Property Relationships in Polar Perovskite Oxides: *Neamul Hayet Khansur*[1]; [1]Case Western Reserve University

3:00 PM Break

3:20 PM
Ferroelectric Properties of $BaTiO_3$ Grains, Grains Inside Fibers and Microcrystalline Ceramics: *Kerstin Neuhauser*[1]; Oliver Diwald[1]; Thomas Berger[1]; [1]University Salzburg

3:40 PM
Engineering of Carbon Defects in TiO2 Nanoparticle Architectures: *Guillem Vives Ollé*[1]; Thomas Berger[1]; Gilles Bourret[1]; Oliver Diwald[1]; [1]Paris Lodron Salzburg University

4:00 PM
Influence of Interface Energy on Nanoparticle Growth Kinetics: *Douglas Gouvêa*[1]; [1]University of Sao Paulo

4:20 PM
Large Scale Production of Elemental Nano Boron Powder: *Selcuk Acar*[1]; Mehmet Somer[1]; [1]Pavezyum Chemicals

4:40 PM
Green Synthesis of Copper Oxide Nanoparticles Using Aqueous Canarium Schweinfurthii Leaf Extract and the Evaluation of their Antimicrobial Activity: *Adachukwu Nkwor*[1]; Joy Ikenyirimba[2]; Chinwe Uchenna-Uwadi[1]; Perpetual Okekearu[1]; Ikhazuagbe Ifijen[3]; Doris Ikechukwu[4]; Esther Ikhuoria[5]; [1]Alex Ekwueme Federal University; [2]University of Arizona; [3]Rubber Research Institute of Nigeria; [4]Ebonyi State University; [5]University of Benin

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Energy Materials for Sustainable Development — Energy Harvesting, System and Application

Sponsored by: ACerS Energy Materials and Systems Division

Program Organizers: Sepideh Akhbarifar, The Catholic University of America -Vitreous State Lab; Jianhua Tong, Clemson University; Yang Bai, University of Oulu; Eva Hemmer, University of Ottawa; Charmayne Lonergan, Missouri University of Science and Technology; Armin Feldhoff, Leibniz University Hannover; Takayoshi Katase, Institute of Science Tokyo; Bed Poudel, Pennsylvania State University; Ekaterina Pomerantseva, Drexel University; Kai He, University of California, Irvine

Wednesday PM | October 1, 2025
B234 | Convention Center

Session Chairs: Armin Feldhoff, Leibniz University Hannover; Holger Kleinke, University of Waterloo

2:00 PM
AC Loss in CNT Composite Strands for Potential Application in Motor and Generator Windings at High Frequencies: *Mike Sumption*[1]; [1]Ohio State University

2:20 PM
Advanced Ceramic Ion-Exchange Membranes for Energy Applications: *Amanda Gibson*[1]; Susanna Tanck[1]; Meghan Stout[1]; Neil Kidner[1]; [1]Nexceris

2:40 PM
Cascade Organic Rankine Cycle (ORC) Power Production Systems Using a Low-Temperature Heat Source: *Faith Babalola*[1]; Taiwo Arowora[1]; Oluwatobi Oyinlola[1]; [1]University of Lagos

3:00 PM
Coil-Less Carbon Fiber Composites for Structural Inductors: A New Functionality for Smart Structures: *Deborah Chung*[1]; Sruthi Krishnaswamy Narayanan[1]; [1]State University of New York at Buffalo

3:20 PM Break

3:40 PM
Growth of Vertically Aligned BaTiO Nanowire Arrays on Flexible Substrates for Piezoelectric Energy Harvesting: *Sakhavat Dadashov*[1]; Ender Suvaci[1]; [1]Eskisehir Technical University

4:00 PM
Highly Crystalline Graphite Synthesis from Coal with a Sustainable Process: *Ki-Joong Kim*[1]; Ngoc Tien Huynh[1]; TheDung Nguyen[1]; YunYang Lee[1]; Yuan Gao[1]; Viet Hung Pham[1]; Congjun Wang[1]; Christopher Matranga[1]; [1]National Energy Technology Laboratory

4:20 PM
Innovative Carbon Metal Composite Wires for Electric Motors: *Obieda Altarawneh*[1]; Caleb Gula[1]; Jakia Sharmin Mim[1]; Michael Kennedy[1]; Frank Kraft[1]; Yahya Al-majali[1]; [1]Ohio University

4:40 PM
Ionic Transport Properties of Acceptor Doped Layered Hexagonal Perovskites: *Joshua Willoughby*[1]; Kyle Brinkman[1]; [1]Clemson University

CERAMIC AND GLASS MATERIALS

Engineering Ceramics: Microstructure-Property-Performance Relations and Applications — Composites / Properties of Engineering Ceramics

Sponsored by: ACerS Engineering Ceramics Division

Program Organizers: Junichi Tatami, Yokohama National University; Young-Wook Kim, WORLDEX Industry & Trading Co., Ltd.; Hua-Tay Lin, Guangdong University of Technology; Michael Halbig, NASA Glenn Research Center

Wednesday PM | October 1, 2025
B240/241 | Convention Center

Session Chair: To Be Announced

2:00 PM
Effect of Carbon on the Microstructure and Phase Evolution of High Entropy Dual Phase Ceramics: *Rubia Hassan*[1]; William G. Faherenholtz[2]; Gregory E. Hilmas[2]; Jeremy Watts[2]; [1]Missouri University of Science and Technology; [2]Missouri university of Science and Technology

2:20 PM
Percolation-Driven Thermal Conductivity Improvement in Pyrolyzed MXene/SiOC Nanocomposites: *Mubina Shaik*[1]; Erica Schulz[1]; Kathy Lu[1]; [1]University of Alabama at Birmingham

2:40 PM
Design and Sintering of Ceramic-Metal Composites for Extreme Environment Applications: *Qiaofu Zhang*[1]; [1]University of Alabama

3:00 PM
Microstructure Development of Electro-Conductive Aluminum Nitride for Sensor Applications: *Michael Mulholland*[1]; Joy Morin[1]; Jorgen Rufner[1]; [1]Idaho National Laboratory

3:20 PM Break

3:40 PM
Effect of Carbon Content on Electrical, Thermal, and Mechanical Properties of Pressureless Sintered SiC Ceramics: *Hyun-Sik Kim*[1]; Young-Wook Kim[2]; [1]University of Seoul; [2]WORLDEX Industry & Trading Co., Ltd.

4:00 PM
A Statistical Model of Microstructural Toughening in Ceramics: Sajjad Hossain[1]; Hunter Brumblay[1]; Alyssa Stubbers[2]; Derek Dupre[2]; Gregory Thompson[2]; *Christopher Weinberger*[1]; [1]Colorado State University; [2]University of Alabama

4:20 PM
Small Tests that Make a Big Difference: Correction of the Plastic Size Effect During Micromechanical Testing: *Alyssa Stubbers*[1]; Sajjad Hossain[2]; Christopher Weinberger[2]; Gregory Thompson[1]; [1]University of Alabama; [2]Colorado State University

4:40 PM
Fatigue Behavior of Grain Boundaries in High Thermal Conductivity Silicon Nitride Ceramics Evaluated by Microcantilever Bending Test: *Junichi Tatami*[1]; Komaki Matsuura[1]; Motoyuki Iijima[1]; Takuma Takahashi[2]; Tatsuki Ohji[1]; Hiromi Nakano[3]; [1]Yokohama National University; [2]Kanagawa Institute of Industrial Science and Technology; [3]Toyohashi University of Technology

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Hybrid Organic-Inorganic Materials for Alternative Energy — Hybrid Organic-Inorganic Materials for Alternative Energy II

Program Organizers: Andrei Jitianu, Lehman College, City University of New York; Lisa Klein, Rutgers University; Lia Stanciu, Purdue University; Mihaela Jitianu, William Paterson University; Alessandro Martucci, University of Padova

Wednesday PM | October 1, 2025
B246 | Convention Center

Session Chair: Alessandro Martucci, University of Padua

2:00 PM Invited
Hybrid Materials for Ion Conduction: *Bruce Dunn*[1]; [1]University of California

2:30 PM Invited
Nanocomposite Photoelectrodes and Photocatalysts for Solar Water Splitting: *Go Kawamura*[1]; [1]Toyohashi University of Technology

3:00 PM Invited
Optimizing LiCoO for Catalytic Applications: Novel Post-Processing Strategies for Enhanced Performance: *Alp Sehirlioglu*[1]; Emily Pentzer[2]; [1]Case Western Reserve University; [2]Texas A&M

3:30 PM Break

3:50 PM Invited
Synthesis of CuWO4 / CuO Photocatalyst and Use in Photodegradation of Organic Hydrocarbons in Water: *Pelagia-Irene Gouma*[1]; [1]Ohio State University

4:20 PM Invited
On the Development of High-Performance III-V/Si Tandem Solar Cells: From Materials to Devices: Lauren Kaliszewski[1]; Tal Kasher[1]; Marzieh Baan[1]; Steven Ringel[1]; *Tyler Grassman*[1]; [1]The Ohio State University

4:50 PM Invited
Tunable Bandgap Opening in Bilayer Silicene for Enhanced Mid-Infrared Photonic Energy Harvesting: Nihal Narra[1]; kumar Vishal[1]; Hong Huang[1]; *Yan Zhuang*[1]; [1]Wright State University

PROCESSING AND MANUFACTURING

Lightweight Composites, Materials & Alloys — Processing and Mechanical Behavior

Sponsored by: TMS: Materials Characterization Committee

Program Organizers: Ramasis Goswami, Naval Research Laboratory; Tanjore Jayaraman, United States Air Force Academy; Ramachandra Canumalla, Weldaloy Specialty Forgings; Aashish Rohatgi, Pacific Northwest National Laboratory

Wednesday PM | October 1, 2025
B231 | Convention Center

Session Chair: Aashish Rohatgi, Pacific Northwest National Laboratory

2:00 PM
Fabrication of Multi-Layered Aluminum Composite Sheets via Accumulative Roll Bonding (ARB) Process: *Jung Han Kim*[1]; Dae Seong Han[1]; Daenyeon Kim[1]; [1]Gyeongbuk Institute of IT Convergence Industry Technology

2:30 PM
High-Precision Thermophysical Property Database for Aluminum Alloys in Semiconductor Applications: *Zhi Liang*[1]; Ursula Kattner[1]; Fan Zhang[1]; [1]National Institute of Standards and Technology

2:50 PM
Crystal Plasticity Insights Into Directionally Dependent Surface Roughness in CP-Ti: *Kyung Mun Min*[1]; Hyuk Jong Bong[2]; [1]Korea Institute of Materials Science; [2]Gyeongsang National University

3:10 PM
Tailoring Damage-Tolerant Properties of Additively Manufactured Ti-6Al-4V via Post-Processing Heat Treatments: Ralph Bush[1]; Benjamin Smith[1]; Elijah Palm[1]; Tessa Barbosa[1]; Helen Works[1]; Therasa Bush[1]; Leah Watson[1]; *Tanjore Jayaraman*[1]; [1]United States Air Force Academy

3:40 PM Break

4:00 PM
Tailoring of Microstructure Through Heat-Treatment for Enhanced Mechanical Properties in Nb-Rich -TiAl Alloy: *Raashid Firoz*[1]; Rahul Mitra[1]; [1]Indian Institute of Technology, Kharagpur

4:20 PM
Tailoring 7000 Series Aluminum Alloys via Magnetic Field Heat Treatment: *Kirk Lemmen*[1]; Damilola Alewi[1]; Haluk Karaca[1]; Paul Rottmann[1]; Heather Murdoch[2]; Daniel Magagnosc[2]; [1]University of Kentucky; [2]US ARMY DEVCOM

4:40 PM
Mechanical and Microstructural Behavior of Friction Stir Powder Additive Manufactured Ceria-Stabilized Zirconia and Polymer-Derived Ceramic Reinforced AA7075 Composites: *Nisar Khan*[1]; Ajay Kumar[1]; [1]Indian Institute of Technology Tirupati

SPECIAL TOPICS

Materials and Manufacturing in Low Earth Orbit (and Beyond) — Building Space Infrastructure in Low Earth Orbit and Beyond

Sponsored by: TMS: Solidification Committee

Program Organizers: David Williams, Ohio State University; Alan Luo, Ohio State University; Glenn Daehn, Ohio State University; Antonio Ramirez, The Ohio State University; Boyd Panton, Ohio State University; Nathan Ames, Ohio State University; Ken Savin, REdwire Space; Jonathan Volk, Voyager Space

Wednesday PM | October 1, 2025
C161B | Convention Center

Session Chair: David Williams, Ohio State University

2:00 PM Introductory Comments

2:10 PM
Commercial Space Flight: Opportunities for Materials/ Manufacturing: *David Williams*[1]; [1]Ohio State University

2:30 PM
Analysis of Various Geopolymer Lunar Concrete Mixtures Mixed and Cured on the International Space Station: *Adam Johnson*[1]; Louise Littles[2]; Aleksandra Radlinska[1]; Sven Bilén[1]; [1]The Pennsylvania State University; [2]NASA Marshal Space Flight Center

2:50 PM
Optimizing Surface Melting Techniques for In-Space Aluminum Fabrication: *Kasra Momeni*[1]; [1]University of Alabama

3:10 PM
Towards Lifetime Predictions for Widegap Semiconductors in Low Earth Orbit: *Wolfgang Windl*[1]; [1]Ohio State University

3:30 PM Break

3:50 PM
Laser Directed Energy Deposition Additive Manufacturing of Lunar Regolith Simulant: *Sizhe Xu*[1]; Marwan Haddad[1]; Aslan Bafahm Alamdari[1]; Annabel Shim[1]; Alan Luo[1]; Sarah Wolff[1]; [1]The Ohio State University

4:10 PM
Oxide Dispersion Strengthening via Additive Processing: A Revolutionary New Approach for High Temperature Alloys: *Michael Mills*[1]; Andreas Bezold[1]; Subham Chattoraj[1]; Timothy Smith[2]; Calvin Stewart[1]; Stephen Niezgoda[1]; Emmanuelle Marquis[3]; [1]The Ohio State University; [2]NASA Glenn Research Center; [3]University of Michigan

4:30 PM
A Multifunctional SolidStir® Manufacturing Technology for Extra Terrestrial Applications: *Kumar Kandasamy*[1]; Anurag Gumaste[1]; Pankaj Kulkarni[1]; Ravi Sankar Haridas[2]; Rajiv Mishra[2]; [1]Enabled Engineering; [2]University of North Texas

4:50 PM Concluding Comments

ARTIFICIAL INTELLIGENCE

Materials Processing and Fundamental Understanding Based on Machine Learning and Data Informatics — Materials Processing and Fundamental Understanding Based on Machine Learning and Data Informatics II

Sponsored by: ACerS Basic Science Division, TMS: Computational Materials Science and Engineering Committee

Program Organizers: Fei Peng, Clemson University; Kathy Lu, University of Alabama Birmingham; Dilpuneet Aidhy, Clemson University; Yi Je Cho, Sunchon National University

Wednesday PM | October 1, 2025
D283 | Convention Center

Session Chair: To Be Announced

2:00 PM Invited
ML-Informed ReaxFF Development for Complex Metal Carbide, Oxide and Nitride Materials: *Adrianus Van Duin*[1]; Asma Ul Hosna[1]; Mozhdeh Mirakhory[1]; Zihan Wang[2]; Wei Chen[2]; [1]Penn State University; [2]Northwestern University

2:30 PM Invited
Thermodynamic Investigation of LCO/LSM-Based Perovskites via CALPHAD/DFT/ML: *Yu Zhong*[1]; [1]Worcester Polytechnic Institute

3:00 PM
Unraveling Doping Effects in LaCoO3 via Machine Learning-Accelerated First-Principles Simulations: *Guangchen Liu*[1]; Songge Yang[1]; Yu Zhong[1]; [1]Worcester Polytechnic Institute

3:20 PM
Creep Prediction for LPBF Haynes 282 Using Machine Learning With Microstructural Considerations: *Yu-Tsen Yi*[1]; Nicholas Lamprinakos[1]; Xiang Chen[2]; Anthony Rollett[1]; [1]Carnegie Mellon University; [2]Oak Ridge National Laboratory

MATERIALS-ENVIRONMENT INTERACTIONS

Materials Under Extreme Environment — Materials Under Extreme Environment II

Sponsored by: ACerS Engineering Ceramics Division, TMS: Mechanical Behavior of Materials Committee, TMS: Computational Materials Science and Engineering Committee

Program Organizers: Robert Slapikas, DEVCOM Army Research Laboratory; Anindya Ghoshal, DEVCOM Army Research Laboratory; Douglas Wolfe, Pennsylvania State University

Wednesday PM | October 1, 2025
D181 | Convention Center

Session Chairs: Robert Slapikas, DEVCOM Army Research Laboratory; Anindya Ghoshal, DEVCOM Army Research Laboratory; Douglas Wolfe, The Pennsylvania State University

2:00 PM Introductory Comments

2:05 PM
UHTCMC Green Bodies Formed by Electrophoretic Co-Deposition of ZrC and SiC on Carbon Fiber: *Michael Ammendola*[1]; Ngon Tran[2]; Robert Slapikas[3]; Anindya Ghoshal[2]; Douglas Wolfe[1]; [1]Pennsylvania State University; [2]DEVCOM Army Research Laboratory; [3]SURVICE Engineering Company

2:25 PM
The Effects of Dynamic Shock Compression of REE-Doped Cryptomelane (K-OMS-2): *Morgan Gillis*[1]; Jack Gugino[1]; Mithun Bhowmick[1]; Mark Krekeler[1]; [1]Miami University

2:45 PM
Novel Energy Absorbing Ceramic Materials for Rotating Detonation Engines: *Rodney Trice*[1]; Benjamin Lam[1]; Bianka Pajo[1]; Carlos Martinez[1]; [1]Purdue University

3:05 PM
Tailoring Microstructure and Phase Constitution of Ytterbium Disilicate Environmental Barrier Coatings Manufactured by Atmospheric Plasma Spraying: *Jie Zhang*[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

3:25 PM Break

3:45 PM
Molecular Dynamics Simulations of Shock in the Ni-Al System: *Logan Nagy*[1]; Adib Samin[1]; [1]Air Force Institute of Technology

4:05 PM
On the Role of Grain Boundaries in Metal Oxidation: Colin McLagan[1]; Mark Mysonhimer[1]; *Adib Samin*[1]; [1]Air Force Institute of Technology

FUNDAMENTALS AND CHARACTERIZATION

Microstructural Control in Materials Processing: Role of Phase Transformation Pathways — Microstructural Control in Materials Processing: Role of Phase Transformation Pathways II

Sponsored by: TMS: Phase Transformations Committee

Program Organizers: Bharat Gwalani, North Carolina State University; Soumya Nag, Oak Ridge National Laboratory; Abhishek Sharma, Worcester Polytechnic Institute; Sriswaroop Dasari, University of Texas at El Paso; Ashley Paz y Puente, University of Cincinnati; Paul Gibbs, Los Alamos National Laboratory; Sophie Primig, University of New South Wales

Wednesday PM | October 1, 2025
C162B | Convention Center

Session Chair: To Be Announced

2:00 PM Invited
Characterization of Microstructural Disorder in Metallics: Charles Maher[1]; Katherine Moody[2]; Michael Lastovich[2]; Katherine Newhall[1]; Bharat Gwalani[2]; *Christopher Rock*[2]; [1]University of North Carolina at Chapel Hill; [2]North Carolina State University

2:30 PM
Vacancy Migration and Kirkendall Pore Formation in the Ni-Cr-Al-Ti System: *Nicholas Simpson*[1]; Ugochukwu Ochieze[1]; Ashley Paz y Puente[1]; [1]University of Cincinnati

2:50 PM
Enhanced Strength-Ductility Synergy in Precipitation Strengthened Complex Concentrated Alloy Through Thermomechanical Treatment: *Ayush Sourav*[1]; D.S Gowtam[2]; Shanmugasundaram Thangaraju[1]; [1]Defence Institute of Advanced Technology; [2]Naval Metallurgical Research Laboratory

3:10 PM Break

3:30 PM Invited
Magnetic Field-Assisted Processing of Martensitic Steels: Megan Hurley[1]; Ramon Padin-Monroig[1]; Alexander Donald[1]; James Hamlin[1]; Michael Kesler[2]; Michele Manuel[3]; Mark Meisel[1]; *Victoria Miller*[1]; [1]University of Florida; [2]Oak Ridge National Laboratory; [3]University of Pittsburgh

4:00 PM
Exceptional Retardation of Phase Evolution by Microstructural Feedback Under Electric Current Treatment: *Siwhan Lee*[1]; Yijae Kim[1]; Taehyeok Kang[2]; Junyoung Chae[1]; Howook Choi[1]; Pyuck-Pa Choi[2]; Kyeongjae Jeong[3]; Heung Nam Han[1]; [1]Seoul National University; [2]Korea Advanced Institute of Science and Technology; [3]Sungkyunkwan University

4:20 PM
In Situ Characterization of Plastic Flow and Strain Field in Metal Peeling: *Ashish Devkota*[1]; Prabhakar Pagilla[1]; Dinakar Sagapuram[1]; [1]Texas A&M University

4:40 PM
Effect of Al, Bi, Ti, Ca, Mischmetal and Fe-Powder Additions on the Structure and Mechanical Properties of Nickel-Alloyed Ductile Iron: *Adnan Adib Ahamed*[1]; Jingjing Qing[1]; Mingzhi Xu[1]; [1]Georgia Southern University

BIOMATERIALS

Next Generation Biomaterials — Next Generation Biomaterials VI

Sponsored by: ACerS Bioceramics Division, TMS: Biomaterials Committee

Program Organizers: Roger Narayan, University of North Carolina; Tanveer Tabish, University of Oxford

Wednesday PM | October 1, 2025
C171 | Convention Center

Session Chairs: Sung Kang, Korea Advanced Institute of Science and Technology (KAIST); Maria Quiñonez-Angulo, The Ohio State Univeristy

2:00 PM
Bone-Inspired Self-Adaptive Materials: *Sung Kang*[1]; [1]Korea Advanced Institute of Science and Technology (KAIST)

2:20 PM
Biodegradable Mg Alloy Composite Fabrication Using SolidStir® Processing: *Pankaj Kulkarni*[1]; Anurag Gumaste[1]; Jasim Uddin[2]; Bharat Gwalani[2]; Kumar Kandasamy[1]; [1]Enabled Engineering; [2]North Carolina State University

2:40 PM
A Self-Sealing Patch Graft for Articular Cartilage Defect Repair: *Hasan Rafsan Jani*[1]; Random Lyakisia[1]; Solaiman Tarafder[1]; [1]South Dakota State University

3:00 PM
Plasma/Ozone Induced PolyNaSS Graft-Polymerization onto PEEK Biomaterial for Bio-Integrated Orthopedic Implants: *Chandrima Karthik*[1]; [1]University of Alabama at Birmingham

3:20 PM Break

3:40 PM
Predictive Modeling and Hybrid Ceramic Coating Strategies for Improved Corrosion Resistance of Magnesium Based Implants: Abdelrahman Amin[1]; *Hamdy Ibrahim*[1]; [1]The University of Tennessee at Chattanooga

4:00 PM
Substitution Mediated Change in Mechanical Properties of Bio-Mimetic Apatites: Stephanie Wong[1]; Abigail Eaton[2]; *Arun Nair*[2]; Alix Deymier[3]; [1]Oak Ridge National Lab; [2]Air Force Institute of Technology; [3]University of Connecticut

4:20 PM
Synthesis of Poly(lactide) and Poly(lactones) Using Eutectic and Non-Eutectic Systems for Biodegradable Scaffold Applications: *Maria Quiñonez-Angulo*[1]; Karla Barrera-Rivera[2]; Saul Carrasco-Saavedra[3]; Antonio Martínez-Richa[2]; José Torres-Lubian[4]; Joaquin Barroso-Flores[3]; Davita Watkins[1]; Josué Mota-Morales[3]; [1]The Ohio State University; [2]Universidad de Guanajuato; [3]Universidad Nacional Autónoma de México; [4]Centro de Investigación en Química Aplicada

4:40 PM
Multifunctional Properties of Pressureless Sintered Al2O3-CaTiO3 Nanocomposites: *Prafulla Kumar Mallik*[1]; July Randhari[1]; [1]Indira Gandhi Institue of Technology Sarang

5:00 PM
Production and Characterization of Panicum Maximum Derived Whey and Compost as Biomaterials for Sustainable Bioremediation: A Green Chemistry Approach: *Ita Uwidia*[1]; Ibobo Victor[1]; Stanley Eguaoje[2]; [1]University of Benin; [2]Edo State College of Agriculture and Natural Resources

5:20 PM
Evaluating the Potential of Cow Bones and Horns for Environmentally Friendly Bioremediation of Agricultural Soils: *Ita Uwidia*[1]; Faith Akhidenor[1]; Etinosa Oshodin[1]; [1]University of Benin

BIOMATERIALS

Next Generation Biomaterials — Next Generation Biomaterials VII

Sponsored by: ACerS Bioceramics Division, TMS: Biomaterials Committee

Program Organizers: Roger Narayan, University of North Carolina; Tanveer Tabish, University of Oxford

Wednesday PM | October 1, 2025
C170 | Convention Center

Session Chairs: Andy Holwell, Carl Zeiss Microscopy LLC; Olivia Lundquist, Lehigh University

2:00 PM
Diagnosing Poor Efficacy Through Multi-Scale Characterization of Riboflavin Supplements Using Microscopy, Phase Analysis and AI: *Andy Holwell*[1]; Ria Mitchell[1]; [1]Carl Zeiss Microscopy LLC

2:20 PM
Decoupling Bulk and Surface Properties of Functionalized Solvent-Cast 3D Printed Scaffolds: *Matthew O'Connell*[1]; Diana Hammerstone[1]; Andrew Kitson[1]; Santiago Lazarte[2]; Brandon Krick[2]; Lesley Chow[1]; [1]Lehigh University; [2]Florida A&M University - Florida State University

2:40 PM
Achieving Linear Superelasticity in NiTi by Tailoring Martensitic Transformation Through Composition Modulation: *Vidyanidhi Kabanur*[1]; Zexu Chen[1]; Yunzhi Wang[1]; [1]Ohio State University

3:00 PM
Dual Functionalizing Polymer Membranes for Cornea Replacement: *Olivia Lundquist*[1]; Christie Ortega[1]; John Tolbert[1]; Amelia Zellander[2]; Lesley Chow[1]; [1]Lehigh University; [2]BioLattice, LLC

CERAMIC AND GLASS MATERIALS

Phase Transformations in Ceramics: Science and Applications — Phase Transformations in Ceramics II

Sponsored by: ACerS Basic Science Division

Program Organizers: Scott Mccormack, University of California, Davis; Theresa Davey, Bangor University; Waltraud Kriven, University of Illinois at Urbana-Champaign; Pankaj Sarin, Oklahoma State University; Sanjay V. Khare, University of Toledo

Wednesday PM | October 1, 2025
B132 | Convention Center

Session Chairs: Scott McCormack, University of California, Davis; Theresa Davey, Bangor University

2:00 PM Introductory Comments

2:10 PM Invited
Melting Point of Transition Metal Diborides via Conical Nozzle Levitator: *Fox Thorpe*[1]; Elizabeth Sobalvarro[2]; Jesus Rivera[2]; Scott McCormack[1]; [1]University of California, Davis; [2]Lawrence Livermore National Laboratory

2:40 PM Invited
Troubles With Tantala: *Elizabeth Opila*[1]; Connor Stephens[1]; Niquana Smith[1]; [1]University of Virginia

3:10 PM Invited
Phase Transformations and Superstructure Ordering in Layer- and Tunnel-Structure Ceramics: *Scott Misture*[1]; Shivani Sharma[1]; Jake Amoroso[2]; Kyle Brinkman[3]; Vaclav Petricek[4]; [1]Alfred University; [2]Savannah River National Laboratory; [3]Clemson University; [4]Institute of Physics CAS

3:40 PM Break

4:00 PM Invited
Synthesis of Refractory High Entropy Alloys (RHEAs) by Solid State Reduction of Oxides: Wookyung Jin[1]; Metri Zughbi[1]; Ganesh Balasubramanian[2]; Animesh Kundu[1]; *Helen Chan*[1]; [1]Lehigh University; [2]Univ. of New Haven

4:30 PM
Phase Transitions Predictions in ZrO2 Using Universal Machine Learning Force Fields: *Rajan Khadka*[1]; Patrick Tepesch[1]; [1]Corning Research and Development Corporation

4:50 PM
Thermodynamic Design and Reactive Synthesis of Ferrite-Metal Composites: *Azhagu Devathai Dhanapal*[1]; Paul Ohodnicki[1]; [1]University of Pittsburgh

PROCESSING AND MANUFACTURING

Sintering and Related Powder Processing Science and Technologies — Sintering Control: Linking Formulation, Simulation, and Material Properties

Sponsored by: TMS: Powder Materials Committee, ACerS Basic Science Division

Program Organizers: Charles Maniere, CNRS; Eugene Olevsky, San Diego State University; Ricardo Castro, Lehigh University; Elisa Torresani, San Diego State University; Diletta Giuntini, Eindhoven University of Technology; Wolfgang Rheinheimer, University of Stuttgart

Wednesday PM | October 1, 2025
B233 | Convention Center

Session Chairs: Elisa Torresani, San Diego State University; Douglas Gouvea, Laboratório de Processos Cerâmicos

2:00 PM
Sintering of Binder Jetted Stainless Steel 316L Components: Dimensional and Geometrical Changes: *Elisa Torresani*[1]; Thomas Grippi[1]; Marco Zago[2]; Ilaria Cristofolini[2]; Alberto Molinari[2]; Eugene Olevsky[1]; [1]San Diego State University; [2]University of Trento

2:20 PM
Energy-Efficient Powder Consolidation of Fe-Si Magnetic Composite via In-Situ Friction Stir Forging: *Rajib Kalsar*[1]; Hrishikesh Das[1]; Shivakant Shukla[1]; Lei Li[1]; Tanvi Ajantiwalay[1]; Jacob Haag[1]; Tej Bahadur Chhetri[1]; Bharat Gwalani[2]; Chins Chinnasamy[3]; Vineet Joshi[1]; [1]Pacific Northwest National Laboratory; [2]NC State University; [3]Oak Ridge National Laboratory

2:40 PM Invited
Thermodynamic of Solid-State Sintering: Contributions of Grain Boundary Energy: *Douglas Gouvêa*[1]; [1]University of Sao Paulo

3:10 PM
Simulating Powder Dynamics to Support Sintering Process Optimization in Powder Metallurgy: *Hideyuki Kanematsu*[1]; Masahiko Kuwabara[2]; Jeremy Knopp[2]; Tadaomi Fujieda[3]; Takayoshi Nakano[4]; [1]BEL Inc.; [2]Armatus ai; [3]Prometech Software Inc.; [4]Osaka University

3:30 PM Break

3:50 PM
Convenient Application of SPS in the Understanding of Fundamental Kinetics and Sintering Behavior in Ceramics: *Caen Ang*[1]; Sean Drewry[2]; Ethan Payne[2]; Brandon Connor[2]; [1]UT-ORII; [2]University of Tennessee Knoxville

4:10 PM
Fiber Reinforced Li2O-Fe Composites for Tritium Breeding Applications: *Malachi Nelson*[1]; Michael Moorehead[1]; [1]Idaho National Laboratory

4:30 PM
In-Situ TEM Study of Nanoscale Sintering and Phase Evolution in High-Entropy Alloy Nanoparticles: *Daniela Fonseca*[1]; Martin Harmer[1]; Ricardo Castro[1]; [1]Lehigh University

4:50 PM
Development of a Proxy Molding Technique for Accelerated Binder Jet Printing Materials Optimization: *Junghoon Yeom*[1]; Tyler Bauder[1]; [1]Naval Research Laboratory

IRON AND STEEL (FERROUS ALLOYS)

Steels for Sustainable Development IV — Steel Development Supporting Circular Economics and Recyclability

Sponsored by: TMS: Steels Committee, AIST Metallurgy—Processing, Products and Applications Technology Committee

Program Organizers: Joshua Mueller, Michigan Technological University; Adriana Eres-Castellanos, Los Alamos National Laboratory; Jonah Klemm-Toole, Colorado School of Mines; Colin Stewart, US Naval Research Laboratory; Pello Uranga, CEIT-BRTA; Jeongho Han, Hanyang University; Ian Zuazo, ArcelorMittal Global R&D - Industeel; Hyunseok Oh, University of Wisconsin - Madison; Alexandra Glover, Michigan Technological University

Wednesday PM | October 1, 2025
D282 | Convention Center

Session Chairs: Pello Uranga, University of Navarra; Josh Mueller, Michigan Technological University; Ian Zuazo, ArcelorMittal R&D - Industeel

2:00 PM Introductory Comments

2:10 PM Invited
Influence of Residual Copper on the Weldability and Weld Performance of Low Carbon Steels: *Jonah Klemm-Toole*[1]; Henry Geerlings[1]; Mohan Subramanian[2]; Grant Thomas[2]; Amy Clarke[1]; Kester Clarke[1]; [1]Colorado School of Mines; [2]Cleveland-Cliffs Inc.

2:50 PM
Removal of Copper From Steel Scrap Via Sulfide Salts Treatment: Keyan Matar[1]; *Xiaolei Guo*[2]; Jianyue Zhang[1]; Yuxuan Shui[1]; Gerald Frankel[1]; Alan Luo[1]; Jianxun Hu[3]; Brian Sieger[3]; [1]The Ohio State University; [2]Colorado School of Mines; [3]Honda Development and Manufacturing of America

3:20 PM Break

3:40 PM
Optimizing Strength and Toughness: The Role of Cu-Precipitatation in Quenched and Tempered Steels: *Kapil Dev Sharma*[1]; Anish Karmakar[1]; [1]Indian Institute of Technology, Roorkee

4:00 PM Invited
The Effect of Nitrogen on the Microstructure and Properties of Ultra-High Strength Steels: Allison Kosberg[1]; John Speer[1]; *Emmanuel De Moor*[1]; [1]Colorado School of Mines

4:40 PM
Understanding the Role of Tramp Elements Introduced Through Increased Scrap Recycling: *Lukas Hatzenbichler*[1]; Marek Gocnik[1]; Phillip Haslberger[2]; Matthew Galler[3]; Jozef Keckes[1]; Ronald Schnitzer[1]; [1]Montanuniversität Leoben; [2]Voestalpine Forschungsservicegesellschaft Donawitz GmbH; [3]Voestalpine Wire Rod Austria GmbH

5:00 PM
Microstructural Evolution and Mechanical Response in Interstitial-Free Steel During Interrupted Tensile Deformation: *Sandeep Yadav*[1]; Sadhan Ghosh[1]; [1]Indian Institute of Technology Roorkee

Technical Meeting and Exhibition

MS&T25

MATERIALS SCIENCE & TECHNOLOGY

September 28–October 1, 2025 | Columbus, Ohio, USA

POSTER SESSION

with Presenters

Posters are located in Exhibit Hall C/D

Monday, September 29		
Poster Installation	2:00 p.m. – 4:00 p.m.	
Tuesday, September 30		
Poster Installation	8:00 a.m. – 9:00 a.m.	(If you cannot set-up your poster on Monday)
Poster Session Viewing	2:00 p.m. – 5:00 p.m.	
Poster Session Presentations	5:00 p.m. – 6:00 p.m.	(Please stand by your poster at this time to discuss your research with attendees)
Wednesday, October 1		
Poster Session Viewing	9:00 a.m. – 2:00 p.m.	
Poster Removal	2:00 p.m. – 3:00 p.m.	

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

17th Symposium on Green and Sustainable Technologies for Materials Manufacturing and Processing — Poster Session

Sponsored by: ACerS Engineering Ceramics Division

Program Organizers: Surojit Gupta, University of North Dakota; Mrityunjay Singh, NASA; Tatsuki Ohji, National Institute of Advanced Industrial Science and Technology; Hisayuki Suematsu, Nagaoka University of Technololgy; Enrico Bernardo, University of Padova; Rajiv Asthana, University of Wisconsin; Yiquan Wu, Alfred University; Wei Ji, Wuhan University of Technology

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Designing and Implementing the Waste-to-Wealth Approach for Development of Metallurgical and Nanoscale Materials from Solar Panel Waste: *Maarij Ali*[1]; Maira Khaleel[1]; Salwa Zafar[1]; Muhammad Abdul Basit[1]; [1]Institute of Space Technology

Harnessing Mechanochemistry for Direct Synthesis of Imine-Based Metal–Organic Frameworks: *Zhuorigebatu Tegudeer*[1]; [1]Ohio University

CERAMIC AND GLASS MATERIALS

2D Materials: Synthesis, Properties, and Applications — Poster Session

Sponsored by: ACerS Basic Science Division, ACerS Energy Materials and Systems Division, TMS: Chemistry and Physics of Materials Committee

Program Organizers: Christopher Shuck, Rutgers University; Dave Estrada, Boise State University; Nicholas Glavin, Air Force Research Laboratory

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Broadband Optical Synapses Enabled by Wafer-Scale Flexible 2D PtSe Arrays: *Sang Sub Han*[1]; Jung Han Kim[2]; Hee-Suk Chung[1]; Yeonwoong Jung[3]; [1]Korea Basic Science Institute; [2]Dong-A University; [3]University of Central Florida

Effect of Hydrated Silica-Coir-Based Nanoparticles on the Remediation of Waste Cooking Oil Contaminated Soil for Maize (Zea mays) Cultivation: Joshua Onaifo[1]; Godfrey Otabor[1]; Esther Ikhuoria[1]; Blessing Ilegbinijie[1]; [1]Ambrose Alli University, Ekpoma, Edo State, Nigeria

Investigating the Influence of Silver Nano Shell on the Optical and Thermal Properties of Polydimethylsiloxane: *Ashish Kumar*[1]; Abhishek Kumar[1]; Moutushi Choudhury[2]; [1]Chandigarh University; [2]Amity University

Monolayer Nanofilm Fabrication of Ultra-small Bimetallic Cobalt-Alumina Oxide Nanoparticles for Enhanced Carbon Nanotube Synthesis: *Bishow Regmi*[1]; [1]University of Cincinnati

BIOMATERIALS

3D Printing of Biomaterials and Devices — Poster Session

Sponsored by: TMS: Biomaterials Committee

Program Organizers: Sahar Vahabzadeh, Northern Illinois University; Solaiman Tarafder, South Dakota State University; Amit Bandyopadhyay, Washington State University; Susmita Bose, Washington State University

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Alkali-Heat Treated Titanium Loaded with Curcumin for Bone Tissue Engineering; Release Kinetics and In Vitro Biological Properties: *Andrew Cedillo*[1]; Sahar Vahabzadeh[1]; [1]Northern Illinois University

Copper-Based Antimicrobial Filters Fabricated via a Hybrid 3D Printing–Casting Approach: *Sheikha Aljnaa*[1]; Amjad Khalil[1]; Oraib Al-Ketan[1]; Sabarinathan Palaniyappan[1]; Dalaq Ahmed[1]; [1]King Fahd University of Petroleum & Minerals

In Vivo Performance of Additive Manufacturing Implants vs. Commercially Available Implants: *Mari Koike*[1]; Azusa Seki[2]; Yutaka Yanaba[3]; Susan Hummel[4]; Toru Okabe[5]; [1]Nippon Dental University; [2]Fukushima Medical Device Development Support Centre; [3]University of Tokyo Institute of industrial Science; [4]Harry S. Truman Memorial Veterans' Hospital; [5]Baylor College of Dentistry

ADDITIVE MANUFACTURING

Additive Manufacturing Modeling, Simulation, and Machine Learning: Microstructure, Mechanics, and Process — Poster Session

Sponsored by: TMS: Additive Manufacturing Committee, TMS: Integrated Computational Materials Engineering Committee

Program Organizers: Jing Zhang, Purdue University; Li Ma, Johns Hopkins Applied Physics Laboratory; Charles Fisher, Office Of Naval Research; Brandon McWilliams, US Army Research Laboratory; Yeon-Gil Jung, Korea Institute of Ceramic Engineering & Technology

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Session Chair: Jing Zhang, Purdue University

Accelerating Grain Structure Predictions via Surrogate Thermal Modeling in Laser Powder Bed Fusion: *Michael Paleos*[1]; Berkay Bostan[1]; Albert To[1]; [1]University of Pittsburgh

Explore Feedstock Powders and Binder Systems Using an Open-Source Binder Inkjet 3D Printer: *Andrew Gillespie*[1]; Jing Zhang[1]; [1]Purdue University

Integration of Additive Manufacturing Techniques in Novel Electric Motor Design and Fabrication: *Andrew Gillespie*[1]; Tiraruek Ruekamnuaychok[1]; Liwei Zhang[1]; Scott Sudhoff[1]; Jing Zhang[1]; [1]Purdue University

Modeling Powder Sintering Process Using Lattice Boltzmann Method: *Liwei Zhang*[1]; Rou Chen[2]; Huidan (Whitney) Yu[1]; Jing Zhang[1]; [1]Purdue University; [2]China Jiliang University

ADDITIVE MANUFACTURING

Additive Manufacturing of Ceramic-Based Materials: Process Development, Materials, Process Optimization and Applications — Poster Session

Sponsored by: ACerS Basic Science Division, ACerS Engineering Ceramics Division, ACerS Manufacturing Division

Program Organizers: Xuan Song, University of Iowa; Lei Chen, University of Michigan-Dearborn; Yiquan Wu, Alfred University; Paolo Colombo, University of Padova; Rajendra Bordia, Clemson University; Long-Qing Chen, Pennsylvania State University

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Tailoring Material Properties of 3D Printed Alumina Through DLP Printing and Firing Parameters: *Adriana Joyce*[1]; [1]SiNAPTIC Technologies

ADDITIVE MANUFACTURING

Additive Manufacturing, Directed Energy Deposition of Metals: Processing – Microstructure – Mechanical Property Relationships — Poster Session

Sponsored by: TMS: Additive Manufacturing Committee

Program Organizers: Jonah Klemm-Toole, Colorado School of Mines; Joy Gockel, Colorado School of Mines

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Alloy Design of Printable Precipitation Strengthened Al-Zn Alloys Using Grain Refinement and Crack Mitigation Alloying Strategies: *Anne Dunn*[1]; John O`Connell[1]; Bhaskar Majumdar[1]; [1]New Mexico Institute of Mining and Technology

Cavity-Induced Bubbles and Pore Formation of Laser Direct Energy Deposited Titanium Alloy: Influence of Powder Melting Degree: *Chen Mingyuan*[1]; Zhang Jikui[1]; [1]Beihang University in China

Compositionally Optimized Superalloys for Additive Manufacturing: Understanding the Microstructure-Crack Resistance-Property Relationship: *Tae-Gyeong Kim*[1]; A-Reum Lee[1]; Hyun-Uk Hong[1]; Chan-Hee Lee[2]; Won-Suk Ko[3]; Byung-Soo Lee[4]; Hae-Jin Lee[4]; [1]Changwon National University; [2]Korea Advanced Institute of Science and Technology; [3]Inha University; [4]Korea Institute of Industrial Technology

Development of Printable High Strength Aluminum-Copper Alloys for Additive Manufacturing Applications Using Grain Refinement and Crack Mitigation Alloying Strategies: *John O`Connell*[1]; Anne Dunn[1]; Bhaskar Majumdar[1]; [1]New Mexico Institute of Mining and Technology

Interactions Between Grain Characteristics and Ion Irradiation in Additively Manufactured CoCrFeNi-Based High-Entropy Alloys: Jiaxuan Li[1]; Wei-Ying Chen[2]; Meimei Li[2]; *Shunyu Liu*[1]; [1]Clemson University; [2]Argonne National Laboratory

Microstructures and Tensile Properties of BN-Reinforced Aluminum Composites Manufactured by Directed Energy Deposition: *Sumin Kim*[1]; Yoon Suk Choi[1]; Tae Yang Bang[1]; JaeHyeong Kim[1]; HaeJu Jo[1]; WookJin Lee[1]; [1]Pusan National University

Porosity Prediction with Multi-Layer Perceptron from Thermal Imaging of DED of Steel and Inconel: *Aniqa Lim*[1]; Francisco Robles Hernandez[1]; [1]University of Houston

ADDITIVE MANUFACTURING

Additive Manufacturing: Design, Materials, Manufacturing, Challenges and Applications — Poster Session

Sponsored by: ACerS Other

Program Organizers: Navin Manjooran, Solve; Gary Pickrell, Virginia Tech

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Additive Manufacturing of High Density Ultra High Temperature Ceramics for Aerospace Applications: *Varad Agarwal*[1]; Ambreen Nisar[1]; [1]Florida International University

Microstructural Evaluation of Thin-Wall Sections of 316L Stainless Steel Produced by Laser Powder-Bed Fusion Processing: *Alan Jankowski*[1]; Joshua Yee[1]; Manuel Lopez-Martinez[1]; Ryan Nishimoto[1]; Meghan Rogers[1]; [1]Sandia National Laboratories

One Go Approach on Developing Topologically Interlocked Materials (TIMs) via Fused Filament Fabrication Process: *Sabarinathan Palaniyappan*[1]; Ahmed S Dalaq[1]; [1]King Fahd University of Petroleum and Minerals

Plasma-Jet Printing for Surface Modification and Self-Sintered Multi-Material Deposition: *Lakshmi Prakasan*[1]; Harish Subbaraman[1]; [1]Oregon State University

NUCLEAR ENERGY

Advanced Characterization of Materials for Nuclear, Radiation, and Extreme Environments VI — Poster Session

Sponsored by: TMS: Nuclear Materials Committee

Program Organizers: Cheng Sun, Clemson University; Caitlin Kohnert, Los Alamos National Laboratory; Samuel Briggs, Oregon State University; Michael Short, Massachusetts Institute of Technology; Khalid Hattar, University of Tennessee Knoxville

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Quantifying Amorphous Fractions Using Different Characterization Techniques: *Will Gardner*[1]; Cale Overstreet[1]; Maik Lang[1]; Eric O'Quinn[1]; [1]University of Tennessee Knoxville

Radiation-Induced Amorphization in WO and MoO: Structural Response: *Katherine Parker-Repsher*[1]; Cale Overstreet[1]; Maik Lang[1]; Eric O'Quinn[1]; [1]University of Tennessee, Knoxville

MATERIALS-ENVIRONMENT INTERACTIONS

Advanced Coatings for Wear and Corrosion Protection — Poster Session

Program Organizers: Evelina Vogli, Flame Spray Inc.; Virendra Singh, SLB

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Session Chair: Evelina Vogli, Flame Spray Inc.

Effect of Chromium Content on Intermetallic Growth and Heat Resistance in Hot-Dip Aluminized Ferritic Stainless Steels: *Euijin Jung*[1]; Jihun Choi[1]; Daeyoon Kim[1]; Jooyoul Huh[1]; [1]Korea University

Enhanced Wear Resistance of AS41 Magnesium Alloy via Plasma Electrolytic Oxidation: *Bruno Pereira*[1]; Thiago Gontarski[1]; Ricardo Torres[1]; Paulo Soares Jr[1]; [1]Pontifícia Universidade Católica do Paraná

Enhancing Tribological and Corrosive Properties of AM60 and AZ91 Magnesium Alloys via PEO Surface Modification: *Paulo Soares*[1]; Tarciana Toscano[1]; Bruno Pereira[1]; Ricardo Torres[1]; [1]Pontifícia Universidade Católica do Paraná

Modern Corrosion and Wear-Resistant Coatings Obtained using FA-Charges Operating in Aggressive Conditions of Industrial Production: *Borys Sereda*[1]; Irina Kruglyak[1]; Dmytro Sereda[1]; [1]DSTU

MATERIALS-ENVIRONMENT INTERACTIONS

Advanced Materials for Harsh Environments — Poster Session

Sponsored by: ACerS Other

Program Organizers: Navin Manjooran, Solve; Gary Pickrell, Virginia Tech

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Session Chairs: Gary Pickrell, Virginia Tech; Navin Manjooran, Solve

Measuring the Residual Resistivity Ratios of Superconductive Materials Under Cryogenic Conditions: *Quentin Taylor*[1]; Kirsten Lovelace[1]; Sonya Smith[1]; [1]Howard University

Numerical Methodology to Predict Fatigue Life of Thermal Barrier Coatings: *SangLim Lee*[1]; HyunSu Lee[1]; Yoon Suk Choi[1]; SangWon Myeong[2]; HunHee Kim[2]; [1]Pusan National University; [2]Doosan Enerbility

Vibration Based Analysis of Debonding Defects in a Structure Composed of Multi-Layered Materials with an Application Prospects in Marine Structure: *Dawit Yona*[1]; [1]Gdansk University of Technology

MATERIALS-ENVIRONMENT INTERACTIONS

Advancement of Measurement Technologies for Harsh Environments — Poster Session

Sponsored by: TMS: Energy Committee

Program Organizers: Ruchi Gakhar, Idaho National Laboratory; Ammon Williams, Idaho National Laboratory; Tae-sic Yoo, Idaho National Lab

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Neutron Irradiation and Characterization of NV Centers in Diamond for Quantum Sensor Applications in Reactor Dosimetry: Luke Shoen[1]; Jarod Remy[1]; *Lei Cao*[1]; [1]The Ohio State University

CERAMIC AND GLASS MATERIALS

Advances in Dielectric Materials and Electronic Devices — Poster Session

Sponsored by: ACerS Electronics Division

Program Organizers: Amar Bhalla, University of Texas; Ruyan Guo, University of Texas at San Antonio; Rick Ubic, Boise State University; Matjaž Spreitzer, Jožef Stefan Institute; Tanmoy Maiti, IIT Kanpur

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Cobalt Ferrite–PZT Composite Sensor Assembled at Room Temperature for High-Sensitivity Magnetoelectric Detection: *Luiz Cotica*[1]; Lilian Pereira[1]; Gustavo Dias[1]; Ivair Santos[1]; Ruyan Guo[2]; Amar Bhalla[2]; [1]State University of Maringa; [2]University of Texas at San Antonio

Compact Custom Designed Antenna for Underground Wireless Communication: *Hollis Alden*[1]; Amar Bhalla[1]; Ruyan Guo[1]; [1]University of Texas at San Antonio

Enabling Controlled Growth of Zinc Oxide Nanostructures Through High-Throughput Chemical Bath Deposition: *Sean Garnsey*[1]; Ruyan Guo[1]; Amar Bhalla[1]; [1]University of Texas at San Antonio

Entropy Stabilized Oxides with Ultra-Low Thermal Conductivity: Emerging Class of High Temperature Thermoelectrics: *Tanmoy Maiti*[1]; [1]IIT Kanpur

Machine Learning Models as a Useful Tool for Predicting the Dielectric Breakdown Strength: *Matthew Mileski*[1]; Adib Samin[1]; [1]Air Force Institute of Technology

Magnetoelectric Nanorobots for Targeted Treatment: *Soutik Betal*[1]; Amar Bhalla[2]; Ruyan Guo[2]; [1]IIT Delhi; [2]University of Texas- San Antonio

Redox-Driven Modulation of Optoelectronic Performance in Dy-Doped MoO Thin Films: *Md Zulkernain Haider*[1]; Kartik Ghosh[1]; [1]Missouri State University

Structural and Microstructural Properties in (5A)BO_3 High-Entropy Ferroelectric Ceramics – Effect of the Ba^{2+} Concentration: Karine Felix Santos de Jesus[1]; Marco Antonio Rodriguez Martinez[2]; Ruyan Guo[3]; Amar S. Bhalla[3]; John C. Mantilla Ochoa[1]; *Jose de los Santos Guerra*[1]; [1]Universidade Federal de Uberlandia; [2]Universidade de Brasilia; [3]University of Texas at San Antonio

IRON AND STEEL (FERROUS ALLOYS)

Advances in Ferrous Process Metallurgy — Poster Session

Sponsored by: AIST Metallurgy—Processing, Products and Applications Technology Committee

Program Organizers: Yashwanth Injeti, Big River Steel; Viraj Ashok Athavale, Nucor Steel Memphis Inc; Judy Qiujin Li, ClevelandCliffs

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Research on the Flow Field of 550mm×700mm Rectangular Bloom Mold by SEN Parameters: *Haitao Ma*[1]; Weiqiang Chen[1]; Xueqian Cao[1]; Jie Chen[1]; Yanhui Sun[2]; [1]MCC Capital Engineering & Research Incorporation Limited; [2]University of Science and Technology Beijing

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Advances in Materials and Systems for a Hydrogen Economy — Poster Session

Sponsored by: ACerS Manufacturing Division, ACerS Refractory Ceramics Division

Program Organizers: Manoj Mahapatra, University of Alabama-Birmingham; James Hemrick, Oak Ridge National Laboratory; John Hardy, Pacific Northwest National Laboratory; Jorgen Rufner, Idaho National Laboratory

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Modeling and Analysis of SOFC Performance Degradation Under Steady and Dynamic Load Conditions: *Paul Kalungi*[1]; Saad Waseem[1]; David Tucker[2]; Nana Zhou[2]; Nor Harun[2]; Edward Sabolksy[1]; [1]West Virginia University; [2]National Energy Technology Laboratory

MODELING

Advances in Multiphysics Modeling and Multi-Modal Imaging of Functional Materials — Poster Session

Sponsored by: ACerS Basic Science Division

Program Organizers: Jiamian Hu, University of Wisconsin Madison; Massimo Ghidini, University of Parma; Wenrui Hao, The Pennsylvania State University; Di Qi, Purdue University

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Modeling the Impact of Stress and Roughness on Electrodeposition in All-Solid-State Batteries: *Kaniza Islam*[1]; Yanzhou Ji[1]; Noriko Katsube[1]; [1]The Ohio State University

LIGHTWEIGHT ALLOYS

Advances in Titanium Technology — Poster Session

Sponsored by: TMS: Titanium Committee

Program Organizers: G. Babu Viswanathan, Ohio State University; Michael Mills, Ohio State University; Sriram Vijayan, Michigan Technological University; Abhishek Sharma, Worcester Polytechnic Institute; Soumya Nag, Oak Ridge National Laboratory; Thomas Broderick, Federal Aviation Administration; Simon Ringer, University of Sydney; Vasisht Venkatesh, Pratt & Whitney; Paraic O'Kelly, Ohio State University

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Facile Synthesis of Porous Ti Foams for Enhanced Cell Ingrowth into the Pores: *Mayank Garg*[1]; Tushar Borkar[1]; Sanoj Karki[1]; [1]Cleveland State University

High-Temperature Material Properties of Titanium Alloy Sheet at Different Strain Rates: Yujin Chae[1]; *Minki Kim*[1]; [1]Korea Institute Of Industrial Technology

Microstructural Evolution and Mechanical Property Enhancement in Ti80(CoFeNi)20 Ultrafine Eutectic Composites via Thermal Processing: *Muhammad Aoun Abbas*[1]; Dilshodbek Yusupov[1]; Ki Buem Kim[1]; [1]Sejong University

IRON AND STEEL (FERROUS ALLOYS)

Advances in Understanding of Martensite in Steels III — Poster Session

Sponsored by: AIST Metallurgy—Processing, Products and Applications Technology Committee

Program Organizers: Viraj Ashok Athavale, Nucor Steel Memphis Inc; Michael Gammage, DEVCOM Army Research Laboratory; Daniel Baker, LIFT

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Effects of Manganese Sulfide Morphology on Bending Fracture Mechanism of Martensitic Steel: *Tatsuya Otsuki*[1]; Yoshinobu Yasuoka[1]; Yuma Asada[1]; Shingo Fujinaka[1]; Takashi Yasutomi[1]; Shunji Hiwatashi[1]; [1]Nippon Steel

From Nanoscale to Performance: Directing Precipitate Evolution for Superior Steel Properties: *Kapil Dev Sharma*[1]; Anish Karmakar[1]; [1]Indian Institute of Technology, Roorkee

PROCESSING AND MANUFACTURING

Alloy Phase Transformations at Elevated Temperatures — Poster Session

Sponsored by: TMS: High Temperature Alloys Committee, TMS: Phase Transformations Committee

Program Organizers: Dinc Erdeniz, University of Cincinnati; Mark Aindow, University of Connecticut; Jonathan Priedeman, GE Aerospace; Vahid Tari, ATI - Allegheny Technologies Incorporated

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

High Temperature Deformation Response of Al-Cu-Mn-Zr (ACMZ) Alloys: *Baipalli Latha*[1]; Samarendra Roy[1]; Shibayan Roy[1]; [1]Indian Institute of Technology, Kharagpur

NANOMATERIALS

Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials — Poster Session

Sponsored by: ACerS Basic Science Division, ACerS Electronics Division, ACerS Energy Materials and Systems Division, ACerS Engineering Ceramics Division

Program Organizers: Haitao Zhang, University of North Carolina at Charlotte; Gurpreet Singh, Kansas State University; Kathy Lu, University of Alabama Birmingham; Edward Gorzkowski, Naval Research Laboratory; Michael Naguib, Tulane University; Sanjay Mathur, University of Cologne; Wonmo Kang, Arizona State University; Babak Anasori, Purdue University; Oliver Diwald, Paris Lodron Universitaet Salzburg; Hyunjoo Choi, Kookmin University

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Aqueous Synthesis of Copper Nanoparticles for Creation of Lightweight Multifunctional Nanocomposites: *Gabrielle Grey*[1]; Rianna Gupta[1]; Alan Taub[1]; Mark Hammig[1]; [1]University of Michigan

Combustion Synthesis of SiC/Graphene Nanocomposites with Strong Microwave Absorption: *Bohan Wang*[1]; [1]Tsinghua University

Eco-Friendly Nanoceramic(YSZ)-Chitsosan Thin Films: *Evan Woodward*[1]; Natalie Westwood[1]; Mst Sharmin Mostari[1]; Kavan Joshi[1]; Ricardo Castro[1]; [1]Lehigh University

In Situ Temperature-Dependent X-Ray Diffraction Study of Sn-Doped BaTiO Piezoelectric Ceramic: *Jacob Akana*[1]; Neamul Khansur[1]; [1]Case Western Reserve University

Synthesis of Spherical BN Powders by Templated Carbothermal Reduction and Nitridation: *Dengke Zhao*[1]; [1]Tsinghua University

Ni2+ Mediated Enhanced Microstructural, Optical, and Multiferroic Properties of 0.9KNbO3- 0.1BaNi0.5Nb0.5O3-ä Electro-Ceramics for Photovoltaic Applications: *Ankit Chahar*[1]; [1]Jawaharlal Nehru University

MATERIALS-ENVIRONMENT INTERACTIONS

Corrosion, Protection and Damage Monitoring of Advanced Materials in Natural and Specific Environments — Poster Session

Sponsored by: ACerS Education and Professional Development Council, ACerS Energy Materials and Systems Division, TMS Energy Committee, TMS: Energy Conversion and Storage Committee, TMS: Corrosion and Environmental Effects Committee

Program Organizers: Xueyuan Zhang, Gamry Instruments; Guang-ling Song, Southern University of Science and Technology

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Session Chairs: Guang-ling Song, Southern University of Science and Technology; John Zhang, Gamry Instruments; Qixin Zhou, The University of Akron

Performance Evaluation of Pipeline Coating Disbondment Under Excessive Cathodic Protection: *Yuhan Su*[1]; Qixin Zhou[1]; [1]University of Akron

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Energy Materials for Sustainable Development — Poster Session

Sponsored by: ACerS Energy Materials and Systems Division

Program Organizers: Sepideh Akhbarifar, The Catholic University of America -Vitreous State Lab; Jianhua Tong, Clemson University; Yang Bai, University of Oulu; Eva Hemmer, University of Ottawa; Charmayne Lonergan, Missouri University of Science and Technology; Armin Feldhoff, Leibniz University Hannover; Takayoshi Katase, Institute of Science Tokyo; Bed Poudel, Pennsylvania State University; Ekaterina Pomerantseva, Drexel University; Kai He, University of California, Irvine

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

A Review of the Use of Perovskite in Next-Generation Photovoltaic Systems: *Frederico Margem*[1]; Sergio Monteiro[2]; Carlos Mauricio Vieira[3]; Ítalo Rocha[3]; Hugo Soares[3]; [1]Uniredentor; [2]IME-RJ; [3]UENF

Design, Physicochemical Characterization, and Electrochemical Evaluation of Choline Chloride- and Betaine-Based Deep Eutectic Solvents for Energy Storage Applications: *Maria Quiñonez-Angulo*[1]; José Diaz-Arriaga[2]; Evelyn Olivares Rodríguez[2]; Mara Beltrán-Gastélum[2]; Sergio Pérez-Sicairos[2]; Davita Watkins[1]; Moisés Salazar-Gastelum[2]; [1]The Ohio State Univeristy; [2]Tecnológico Nacional de México/Instituto Tecnológico de Tijuana

High Charge-Discharge Performance of Stacking-sequence Disordered SiC with Carbon as Anode Material for Lithium-Ion Batter: *Manshi Ohyanagi*[1]; Kento Nakanishi[1]; Tomoya Takeda[1]; Kenshiro Shirai[1]; Takahito Imai[1]; Minehiko Ohta[1]; [1]Ryukoku University

Innovative Air-Free Shuttle Enables 24-Hour Air Free Transfer of Li-Ion Battery Materials for SEM/FIB Characterization and Analysis: *Feng Shen*[1]; [1]Scientific Bridge LLC

MLIP-Driven Insights into Structural Changes and Oxygen Dimerization in Li-Rich Ni-Rich Oxide Cathodes: *Prottay Malakar*[1]; Mohammad Babar[1]; Bernardo Barbiellini[2]; Arun Bansil[3]; Venkat Viswanathan[1]; [1]University of Michigan; [2]LUT University; [3]Northeastern University

New Technological Advances Enable Portable Powder X-Ray Diffractometer (XRD) to Operate in a Glovebox: *Feng Shen*[1]; [1]Scientific Bridge LLC

Tradeoffs Curves for AC Losses in Superconducting and Normal Metal Conductors Relevant to MW Class High Power Density Electric Motor Applications: *Hyuk Kwon*[1]; Michael Sumption[1]; Edward Collings[1]; [1]Ohio State University

CERAMIC AND GLASS MATERIALS

Engineering Ceramics: Microstructure-Property-Performance Relations and Applications — Poster Session

Sponsored by: ACerS Engineering Ceramics Division

Program Organizers: Junichi Tatami, Yokohama National University; Young-Wook Kim, WORLDEX Industry & Trading Co., Ltd.; Hua-Tay Lin, Guangdong University of Technology; Michael Halbig, NASA Glenn Research Center

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Effects of Acid/Water Ratio in the Sol-Gel Process for Ceria-Doped Zirconia Particles on Shapes, Crystal Structures, and Compression Behaviors: *Yun Sik Park*[1]; Yi Je Cho[1]; [1]Sunchon National University

Effects of Electrode and Substrate Optimization on Solid Oxide Cell Performance: Susanna Tanck[1]; Meghan Stout[1]; [1]Nexceris, LLC

CERAMIC AND GLASS MATERIALS

Glasses and Optical Materials: Challenges, Advances, and Applications — Poster Session

Sponsored by: ACerS Glass and Optical Materials Division

Program Organizers: Morten Smedskjaer, Aalborg University; N. M. Anoop Krishnan, Indian Institute of Technology Delhi

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Session Chairs: Morten Smedskjaer, Aalborg University; N. M. Anoop Krishnan, IIT Delhi

Copper Ion-Exchange of Tin Mixed-Alkali Silicate Glass: *Jacob Kaspryk*[1]; William LaCourse[1]; [1]Alfred University

Downselection of Crystalline Ensembles for Efficient First-Principles Modeling of Glassy Materials: *Raphael Stone*[1]; Rachel Kurchin[1]; [1]Carnegie Mellon University

Non-Destructive Sequential Imaging of Indentation-Induced Cracking in Oxide Glasses by In Situ Nanotomography: *M. Faizal Ussama Jalaludeen*[1]; Kritika Singh[2]; Jonas A. Finkler[1]; Johan F. S. Christensen[1]; Soeren S. Soerensen[1]; Menghan Shi[1]; Sidsel M. Johansen[1]; Sudheer Ganisetti[1]; Imke Greving[2]; Morten M. Smedskjaer[1]; [1]Aalborg University; [2]Institute of Material Physics, Helmholtz-Zentrum Hereon

Short and Medium Range Structures of Binary GeO_2-SiO_2 Glasses From Molecular Dynamic Simulations: *Navid Marchin*[1]; Jincheng Du[1]; [1]University of North Texas

Structural Transformation of Solids Derived From Crystalline, Amorphous, and Nanoparticle GeO2 Sources: *Monisha Murthi*[1]; Andrew Fernandes[1]; Steve Feller[2]; David Sidebottom[1]; Joel Destino[1]; [1]Creighton University; [2]COE College

Understanding the Structural Role of Indium in Aluminoborosilicate Glass: A Multi-Spectroscopic Study: *Amir Ashjari*[1]; Andrew Ogrinc[2]; Ricardo Lancelotti[3]; Randall Youngman[4]; Henrik Bradtmüller[5]; Myungkoo Kang[1]; Seong Kim[2]; Doris Möncke[1]; [1]Alfred University; [2]Pennsylvania State University; [3]Federal University of São Carlos; [4]Corning Incorporated; [5]University of São Paulo

FUNDAMENTALS AND CHARACTERIZATION

High-Entropy Materials: Solid Solutions, Intermetallics, Ceramics, Functional Materials and Beyond VI — Poster Session

Sponsored by: TMS: Alloy Phases Committee, ACerS Basic Science Division

Program Organizers: Shuozhi Xu, University of Oklahoma; Yiquan Wu, Alfred University; Yu Zhong, Worcester Polytechnic Institute; Michael Gao, National Energy Technology Laboratory; Xingbo Liu, West Virginia University; Peter Liaw, University of Tennessee; Jian Luo, University of California, San Diego; Mitra Taheri, Johns Hopkins University; Amy Clarke, Los Alamos National Laboratory

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

A Methodological Study on Data Representation for Machine Learning Modelling of Thermal Conductivity of Rare-Earth Oxides: *Amiya Chowdhury*[1]; Acacio Rincon Romero[1]; Halar Memon[1]; Eduardo Aguilar-Bejarano[1]; Tanvir Hussain[1]; Grazziela Figueredo[1]; [1]University of Nottingham

Effect of Entropy-Driven Phase Stabilization on Martensitic Transformation in Zr-Ti-Cu-Ni High-Entropy Alloys: *Dong Ma*[1]; [1]Songshan Lake Materials Laboratory

Influence of Ti on the Microstructure and Mechanical Characteristics of (CrFeNiCu)100-xTix High Entropy Alloys: *Dilshodbek Yusupov*[1]; Sung Hwan Hong[1]; Muhammad Aoun Abbas[1]; Hae Jin Park[1]; Ki Buem Kim[1]; [1]Sejong University

Investigation on Effect of Minor Elements in the Mechanical Behavior and Microstructure of (AlCoCrNi)100-xyMnxVy High-Entropy Alloys: *Rakhmatjon Gaipov*[1]; Elyorjon Jumaev[1]; Omon Sultonov[1]; Jakhongir Bakirov[1]; Turaboy Shermatov[2]; Ki Buem Kim[3]; [1]University of Business and Science; [2]The Science Olympiad Center ; [3]Sejong University

Precipitation Hardening Feasibility Within the D022 Phase Range of AlCrMoTiV High Entropy Alloys: *Basil Ochieze*[1]; [1]PGE Aapplied Resources Laboratory

MATERIALS-ENVIRONMENT INTERACTIONS

High-Temperature Corrosion and Degradation of Materials — Poster Session

Sponsored by: TMS: Corrosion and Environmental Effects Committee

Program Organizers: Richard Oleksak, National Energy Technology Laboratory; Kinga Unocic, Oak Ridge National Laboratory; David Shifler, Office of Naval Research; Raul Rebak, GE Global Research

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Predicting Creep Deformation and Damage Using the Wilshire Cano Stewart (WCS) Model with Strain Energy Density (SED) for Alloy 617: *Kojo Benefo*[1]; Calvin Stewart[1]; [1]The Ohio State University

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Hybrid Organic-Inorganic Materials for Alternative Energy — Poster Session

Program Organizers: Andrei Jitianu, Lehman College, City University of New York; Lisa Klein, Rutgers University; Lia Stanciu, Purdue University; Mihaela Jitianu, William Paterson University; Alessandro Martucci, University of Padova

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Reducing Interfacial Impedance at the Metal-Organic Molecule Joint via Electrografting: *Camila Jaillita*[1]; Henrique De Aguiar Minami[2]; Jorge Seminario[2]; Noe Alvarez[1]; [1]University of Cincinnati; [2]Texas A&M University

SPECIAL TOPICS

IGNITE MSE: Bridging Gaps in Innovation and Collaboration — Poster Session

Sponsored by: ACerS President's Council of Student Advisors

Program Organizers: Pattiya Pibulchinda, Northwestern University; Marcus Fish, The American Ceramic Society; Amanda Engen, The American Ceramic Society; Nathaniel McIlwaine, Penn State University

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

A Materials Journey from STEM to STEAM: *Jon Kellar*[1]; Michael West[1]; Katrina Donovan[1]; [1]South Dakota School of Mines and Technology

ARTIFICIAL INTELLIGENCE

Integrated Computational Materials Engineering for Physics-Based Machine Learning Models — Poster Session

Sponsored by: TMS: Integrated Computational Materials Engineering Committee

Program Organizers: William Frazier, Pacific Northwest National Laboratory; Zhengtao Gan, Arizona State University; Lei Li, Pacific Northwest National Laboratory; Yucheng Fu, Pacific Northwest National Laboratory; Philip Goins, US Army Research Laboratory

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Effects of Temperature and Strain Rate on Dynamic Recrystallization and Recovery of Aluminum Alloy 2618: *Venkata Yateendra Guthula*[1]; Matthew Steiner[1]; Christopher Calhoun[1]; [1]University of Cincinnati

Machine Learning Model for Estimating the Number of Grains in Ti–6Al–4V XRD Patterns: *Gabriel Ponon*[1]; Mohommad Redad Mehdi[1]; Ozan Dernek[1]; Hemant Sharma[2]; Pawan Tripathi[1]; Roger French[1]; [1]Case Western Reserve University; [2]Argonne National Laboratory

PROCESSING AND MANUFACTURING

Lightweight Composites, Materials & Alloys — Poster Session

Sponsored by: TMS: Materials Characterization Committee

Program Organizers: Ramasis Goswami, Naval Research Laboratory; Tanjore Jayaraman, United States Air Force Academy; Ramachandra Canumalla, Weldaloy Specialty Forgings; Aashish Rohatgi, Pacific Northwest National Laboratory

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Effects of Trace Elements on Microstructure, Mechanical Properties and Corrosion Characteristics of Al 3000 Based Alloys for Micro-Channel Tube in Heat Exchangers: *Hyeon-Taek Son*[1]; Yong-Ho Kim[1]; Hyo-Sang Yoo[1]; Byong-Gwon Lee[1]; Eun-Chan Ko[1]; [1]Korea Institute of Industrial Technology

Evaluation of Microstructure and Mechanical Properties of Al-B Alloys With Varying Fe and Rare Earth Additions: *Hyo-Sang Yoo*[1]; Yong-Ho Kim[1]; Byeong-Kwon Lee[1]; Eun-Chan Ko[1]; Hyeon-Taek Son[1]; [1]Korea Institute of Industrial Technology

Characterization of Composite Metal Foams Joined Through Brazing: *Afsaneh Rabiei*[1]; John Cance[1]; Chinmaya Prerana Inguva[1]; [1]North Carolina State University

CERAMIC AND GLASS MATERIALS

Manufacturing and Processing of Advanced Ceramic Materials — Poster Session

Sponsored by: ACerS Manufacturing Division

Program Organizers: Bai Cui, University of Nebraska Lincoln; James Hemrick, Oak Ridge National Laboratory; Eric Faierson, Iowa State University; Keith DeCarlo, Blasch Precision Ceramics

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Session Chair: Alexander Dupuy, University of Connecticut

Revisitation of Powder Flowability Interpretation From Tap Densification Response: *Caleb Rhine*[1]; Andrew Guariglia[1]; Jacob Dahlhauser[1]; [1]University of Tennessee Knoxville

Signal Analysis During Micro Hole Drilling Process on Single Crystal Silicon for Semiconductor Device Fabrication Process: *Hwa-Sub Lee*[1]; Jun Sae Han[1]; Doo-Sun Choi[1]; Eun-Ji Gwak[1]; [1]Korea Institute of Machinery & Materials

ARTIFICIAL INTELLIGENCE

Materials Processing and Fundamental Understanding Based on Machine Learning and Data Informatics — Poster Session

Sponsored by: ACerS Basic Science Division, TMS: Computational Materials Science and Engineering Committee

Program Organizers: Fei Peng, Clemson University; Kathy Lu, University of Alabama Birmingham; Dilpuneet Aidhy, Clemson University; Yi Je Cho, Sunchon National University

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Machine Learning of the Creep Life of Heat-Resistant Steel and Thermodynamical Analysis Using Generative AI: *Taehyeon Cho*[1]; Yoon Suk Choi[1]; Wangrok Seok[1]; [1]Pusan National University

Machine Learning Prediction of Oxidation Behaviors of Graphite Materials in Accidental Conditions of High Temperature Gas-Cooled Reactors: Jae Min Kim[1]; *Yi Je Cho*[1]; [1]Sunchon National University

MATERIALS-ENVIRONMENT INTERACTIONS

Materials Under Extreme Environment — Poster Session

Sponsored by: ACerS Engineering Ceramics Division, TMS: Mechanical Behavior of Materials Committee, TMS: Computational Materials Science and Engineering Committee

Program Organizers: Robert Slapikas, DEVCOM Army Research Laboratory; Anindya Ghoshal, DEVCOM Army Research Laboratory; Douglas Wolfe, Pennsylvania State University

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Development of Superhard High-Entropy Carbide and Carbonitrides for Extreme Environments via FAST Sintering: *Lucas Wilson*[1]; [1]Penn State

Understanding the Effects of Microstructure Through Crystal Plasticity Models: *Zyrick Bermudez*[1]; Adib Samin[1]; [1]Air Force Institute of Technology

NUCLEAR ENERGY

Metallic Nuclear Fuel Design, Fabrication and Characterization — Poster Session

Sponsored by: TMS: Materials Characterization Committee, TMS: Nuclear Materials Committee

Program Organizers: Ericmoore Jossou, Massachusetts Institute of Technology; Linu Malakkal, Idaho National Laboratory; Nana Ofori-Opoku, McMaster University; Anil Prasad, Canadian Nuclear Laboratories; Lingfeng He, North Carolina State University; Marat Khafizov, Ohio State University

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Volume Fraction of Porosity and Distinct Phases in Irradiated FAST U-Zr Fuel Using Manual Point Counting and Automatic Image Analysis: *Lily Alberts*[1]; Nicole Rodriguez Perez[1]; Sobhan Patnaik[2]; Geoffrey Beausoleil[2]; Maria Okuniewski[1]; [1]Purdue University; [2]Idaho National Laboratory

FUNDAMENTALS AND CHARACTERIZATION

Microstructural Control in Materials Processing: Role of Phase Transformation Pathways — Poster Session

Sponsored by: TMS: Phase Transformations Committee

Program Organizers: Bharat Gwalani, North Carolina State University; Soumya Nag, Oak Ridge National Laboratory; Abhishek Sharma, Worcester Polytechnic Institute; Sriswaroop Dasari, University of Texas at El Paso; Ashley Paz y Puente, University of Cincinnati; Paul Gibbs, Los Alamos National Laboratory; Sophie Primig, University of New South Wales

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Effect of Heat Treatment Time on the Fatigue Life of 304 Stainless Steel Corrugated Pipes: *Jaehyeon Park*[1]; Yoon Suk Choi[1]; [1]Pusan National University

NANOMATERIALS

Nanotechnology for Energy, Environment, Electronics, Healthcare and Industry — Poster Session

Sponsored by: ACerS Other

Program Organizers: Navin Manjooran, Solve; Gary Pickrell, Virginia Tech

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Session Chairs: Gary Pickrell, Virginia Tech; Navin Manjooran, Solve

Controlled Growth of Vertically Aligned Carbon Nanotubes Using Narrow Size-Distributed Fe-Al Bimetallic Nanoparticles: *Md Rakib Mahmud*[1]; [1]University of Cincinnati

Optimizing Iron Nanoparticles as Tracers for Magnetic Particle Imaging: *Will Graham*[1]; [1]University of Tennessee Space Institute

Synthesis and Characterization of Flexible Poly(aminophenylboronic acid) Nanorods for Reversible, High Affinity Glycoprotein Capture at Physiological Conditions: *Hussian Maanaki*[1]; Kayla Lenz[1]; Terry Xu[1]; Jun Wang[2]; [1]University of North Carolina at Charlotte; [2]Nanodiagnostic Technology, LLC

IRON AND STEEL (FERROUS ALLOYS)

New Frontiers in Physical Metallurgy of Steels — Poster Session

Sponsored by: AIST Metallurgy—Processing, Products and Applications Technology Committee

Program Organizers: Badirujjaman Syed, Arcelormittal Global Research And Development; Maedeh Pourmajidian, Arcelormittal Global R&D - East Chicago

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Session Chairs: Maedeh Pourmajidian, ArcelorMittal Global R&D - East Chicago; Badirujjaman Syed, ArcelorMittal Global R&D - East Chicago

Comparison of Microstructure and Mechanical Properties of the Heterogeneous Nanostructured SUS316LN Stainless Steels: *Hiromi Miura*[1]; Chihiro Watanabe[1]; [1]Toyohashi University of Technology

Effect of Specimen Thickness and Remaining Ligament on the KIsi Value in Fracture Toughness Evaluation According to ASTM E399: *Kideuk Min*[1]; Hyeong-Gyu Kim[1]; Hyeon-Su Jang[1]; Hak-Min Lee[1]; Hyun-Sun Choi[1]; [1]PILETA

Exceptional Dry Sliding Wear Resistance of Low Carbon Steels: Outperforming Medium Carbon Steels: *Kapil Dev Sharma*[1]; Anish Karmakar[1]; [1]Indian Institute of Technology, Roorkee

BIOMATERIALS

Next Generation Biomaterials — Poster Session

Sponsored by: ACerS Bioceramics Division, TMS: Biomaterials Committee

Program Organizers: Roger Narayan, University of North Carolina; Tanveer Tabish, University of Oxford

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Session Chairs: Tanveer Tabish, University of Oxford; Roger Narayan, University of North Carolina

3D Printing of Paclitaxel-Loaded Hydrogel Scaffolds for Postoperative Esophagus Treatment: Yang Li[1]; *Min Wang*[1]; [1]University of Hong Kong

Dual-Sided Laser-Induced Graphene Microheaters for Biomedical Applications: *Collin Richards*[1]; Prakriti Dhungana[1]; Byung-Wook Park[1]; [1]Youngstown State University

Eco-Friendly Synthesis of Amyloid Fibrils From Wheat Flour for Potential Applications: *Anindita Ganguly*[1]; Pelagia-Irene Gouma[1]; [1]The Ohio State University

Flexible Microelectrode Array Fabrication Based on Polymer Coated CNT Fibers for Neurological Applications: *Nilni Weerawarna*[1]; [1]University of Cincinnati

Innovative Crack Repair in Aged Concrete Using Bio-Fibers and Dual-Enzyme Approaches: *Fadime Kara Murdoch*[1]; Rachel Krebs[1]; Cheryl Immethun[1]; Colin Hinton[1]; Brad Heater[1]; Carl Jacobson[1]; Heather Luckarift[1]; [1]Battelle Memorial Institute

Magnetite Nanoparticles-Polydimethylsiloxane Nanocomposite Interactions With Lasers for the Hyperthermia Treatments of Localized Triple-Negative Breast Cancer: A Comparison of Magnetite Nanospheres and Nanorods: *Chukwudi Ezeala*[1]; John Obayemi[2]; Wole Soboyejo[3]; [1]Worcester State University; [2]Worcester Polytechnic Institute; [3]SUNY Polytechnic Institute

Permeability of Biopolymers Composed of Polycaprolactone (PCL) and Corn Husk Fibers: *Marco Del Razo-Ramírez*[1]; Régula N. Hernández-Hernández[1]; Rosa Vázquez- García[1]; Zianya Gómez Soto[1]; Sofía Vázquez Rodríguez[2]; Maria Veloz-Rodriguez[1]; [1]Universidad Autónoma del Estado de Hidalgo; [2]Universidad Autónoma de Nuevo León

Structural and Thermal Stability of Gallium-Doped Hydroxyapatite: *Preston Guynup*[1]; [1]Alfred University

Next-Generation Cephalomedullary Femoral Nailing: Additive Manufacturing of Hybrid PEEK Composites for Enhanced Fixation Device Performance: *Farah Hamandi*[1]; [1]Robson Forensic

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Phasing Out Carbon: Phase Transformation Challenges in Decarbonization Technologies — Poster Session

Sponsored by: TMS: Phase Transformations Committee

Program Organizers: Matthew Steiner, University of Cincinnati; Eric Payton, University of Cincinnati; James Zuback, National Institute of Standards and Technology; Alec Saville, Elementum 3D; Bryan Lim, Oak Ridge National Laboratory; Ian Zuazo, ArcelorMittal Global R&D - Industeel

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Magnetic Effects of Dilute P Alloying on Fe-Ni Alloys: *Luke Begemann*[1]; Ugochukwu Philip Ochieze[1]; Matthew Steiner[1]; [1]University of Cincinnati

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Porous Materials for Energy and Environment Applications — Poster Session

Sponsored by: ACerS Basic Science Division, ACerS Electronics Division, ACerS Energy Materials and Systems Division

Program Organizers: Winnie Wong-Ng; Kevin Huang, University of South Carolina; Lan Li, Boise State University

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Session Chair: Lan Li, Boise State University

Structural Study of Formation of (Bi0.2Na 0.2 K0.2Ba0.2Ca0.2) TiO3 Mesoporous High-Entropy Perovskites: *Patrice Prosper*[1]; Andrei Jitianu[2]; [1]The Graduate Center of the City University of New York; [2]Lehman College, City University of New York

PROCESSING AND MANUFACTURING

Processing and Performance of Materials Using Microwaves, Electric and Magnetic Fields, Ultrasound, Lasers, and Mechanical Work – Rustum Roy Symposium — Poster Session

Sponsored by: ACerS Basic Science Division

Program Organizers: Morsi Mahmoud, Abdullah Al Salem University (AASU); Rishi Raj, University of Colorado; Motoyasu Sato, Chubu University; Dinesh Agrawal, Pennsylvania State University; Christina Wildfire, National Energy Technology Laboratory; Guido Link, Karlsruhe Institute of Technology; Daudi Waryoba, Pennsylvania State University

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Vacuum Melting and Elevated Temperature Forming of High Purity Cu-S Alloy for Semiconductor Interconnect Seed Applications: *Collin Whitt*[1]; Eduardo del-Rio[1]; [1]Tosoh SMD

NUCLEAR ENERGY

Progressive Solutions to Improve the Corrosion Resistance of Nuclear Waste Storage Materials — Poster Session

Sponsored by: TMS: Corrosion and Environmental Effects Committee, TMS: Energy Committee

Program Organizers: Madeleine Jordache, Stevens Institute of Technology; Gary Pickrell, Virginia Tech

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Session Chairs: Madeleine Jordache, Stevens Institute of Technology; Gary Pickrell, Virginia Tech

Developing Glass Frits for Hanford High-Level Waste Immobilization: *Brynn McGrail*[1]; John Vienna[1]; Jose Marcial[1]; Xiaonan Lu[1]; Jess Rigby[1]; [1]Pacific Northwest National Laboratory

PROCESSING AND MANUFACTURING

Sintering and Related Powder Processing Science and Technologies — Poster Session

Sponsored by: TMS: Powder Materials Committee, ACerS Basic Science Division

Program Organizers: Charles Maniere, CNRS; Eugene Olevsky, San Diego State University; Ricardo Castro, Lehigh University; Elisa Torresani, San Diego State University; Diletta Giuntini, Eindhoven University of Technology; Wolfgang Rheinheimer, University of Stuttgart

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Influence of Precursor Chemistry and Calcination Temperatures on the Phase Purity and Microstructure of Gadolinium Zirconate: *Rushikesh Magdum*[1]; William Fahrenholtz[1]; Gregory Hilmas[1]; David Lipke[1]; [1]Missouri University of Science and Technology, Rolla

Low-Temperature Rapid Sintering for the Fabrication of Biphasic Si3N4 Ceramics With Outstanding Mechanical Properties: *Shuo Zhao*[1]; [1]Tsinghua University

Sintering Behavior and Elastic Properties of SnO_2 Ceramics: A Comparative Study of Conventional, Microwave, and Cold Sintering: *Petra Springer Simonova*[1]; Clemence Petit[2]; Willi Pabst[1]; Vojtech Necina[1]; Christophe Meunier[2]; Francois Valdivieso[2]; [1]University of Chemistry and Technology, Prague; [2]Ecole de Mines Saint Etiene

Synergistic Enhancement of Mechanical and Tribological Properties of Multiwalled Carbon Nanotubes Reinforced Inconel 718 Composites: *Sanoj Karki*[1]; Tushar Borkar[1]; [1]Cleveland State University

Understanding Particle Packing Through Finite-Size Lennard-Jones Molecular Dynamics: *Nathaniel Paddock*[1]; Richard Riman[1]; Ryan Sills[1]; [1]Rutgers

CERAMIC AND GLASS MATERIALS

Solid-State Optical Materials and Luminescence Properties — Poster Session

Sponsored by: ACerS Basic Science Division, ACerS Glass and Optical Materials Division

Program Organizers: Mathieu Allix, Laboratoire CEMHTI; Yiquan Wu, Alfred University; Jas Sanghera, Naval Research Laboratory; Akio Ikesue, World-Lab. Co., Ltd; Rong-Jun Xie, Xiamen University; Liangbi Su, Shanghai Institute of Ceramics; Dariusz Hreniak, Institute of Low Temperature and Structure Research; Jan Hostaša, CNR ISSMC - Institute of Science, Technology and Sustainability for Ceramics

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Large Area Micropatterning of CdSe Nanoplatelets: *Hagmar Tinoco Madeira*[1]; Maya Ramamurthy[1]; Yidenekachew Donie[1]; Vivian Ferry[1]; [1]University of Minnesota Twin Cities

IRON AND STEEL (FERROUS ALLOYS)

Steels for Sustainable Development IV — Student Poster Session

Sponsored by: TMS: Steels Committee, AIST Metallurgy—Processing, Products and Applications Technology Committee

Program Organizers: Joshua Mueller, Michigan Technological University; Adriana Eres-Castellanos, Los Alamos National Laboratory; Jonah Klemm-Toole, Colorado School of Mines; Colin Stewart, US Naval Research Laboratory; Pello Uranga, CEIT-BRTA; Jeongho Han, Hanyang University; Ian Zuazo, ArcelorMittal Global R&D - Industeel; Hyunseok Oh, University of Wisconsin - Madison; Alexandra Glover, Michigan Technological University

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Session Chair: Joshua Josh, Michigan Technological University

Effect of Cu on Microstructure and Fracture Toughness of Steels for Sustainable Recycling: *Sijia Wu*[1]; Junya Inoue[1]; [1]The University of Tokyo

Investigation of Mechanical Properties of Dual-Phase Steel in Cryogenic Temperatures: *Yang Guo*[1]; Chris Kovacs[2]; Michael Sumption[1]; Edward Collings[1]; C.G Cantemir[1]; [1]The Ohio State University; [2]Scintillating Solutions LLC

MATERIALS-ENVIRONMENT INTERACTIONS

Thermodynamics of Materials in Extreme Environments — Poster Session

Sponsored by: ACerS Basic Science Division, ACerS Energy Materials and Systems Division

Program Organizers: Xiaofeng Guo, Washington State University; Kyle Brinkman, Clemson University; Alexandra Navrotsky, Arizona State University; Kristina Lilova, Arizona State University; Jake Amoroso, Savannah River National Laboratory; Xingbo Liu, West Virginia University; Gustavo Costa, NASA Glenn Research Center

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Session Chair: Kyle Brinkman, Clemson University

Larnite Ca2SiO4: High-Temperature Mass Spectrometric Study of Thermodynamic Properties: *Sergey Shornikov*[1]; [1]Vernadsky Institute of Geochemistry of RAS

MATERIALS-ENVIRONMENT INTERACTIONS

Understanding Corrosion-Related Cracking — Poster Session

Sponsored by: TMS: Corrosion and Environmental Effects Committee

Program Organizers: Tianle Cheng, National Energy Technology Laboratory; Hyokyung Sung, Kookmin University; Gordon Tatlock, University of Liverpool

Tuesday PM | September 30, 2025
Exhibit Hall C/D | Convention Center

Predicting Environmentally Assisted Fatigue Crack Growth in AA7075 Using Machine Learning Approaches: *Daniel Egbuzie*[1]; Christopher Taylor[1]; Jenifer Locke[1]; Olivia Underhill[1]; [1]Ohio State University

A

Index

C

Index

D

E

Index

F

G

H

Index

I

J

K

Index

L

Index

M

Index

N

O

P

Index

Q

R

S

Index

Index

U

V

W

Index

X

Y

Z